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Strategic Alignment in the Brazilian Automotive Chain: Relationships Between First and Second Tier

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ABSTRACT: This study analysed the extent of strategic alignment in the Brazilian automotive chain by examining the strategies adopted by the Purchasing function in the first tier suppliers for managing relationships with their suppliers. The multiple case studies strategy was used. The theoretical model used for analysis was based on Network Theory, in terms of its fundamental principles – actors, activities and resources.

KEYWORDS: Buyer-supplier relationships, Network Theory, Brazilian automotive chain, Purchasing.

INTRODUCTION

The automobile industry operates in one of the most competitive sectors of the world economy. From the 1980s onwards, the Japanese management model influenced these companies as regards reorganisation of their existing manufacturing, supply and relationship practices with the supply chain, by the introduction of such concepts as push production, just-in-time, kanban, quality control circles, kaizen and integrated logistics (Lima, 2004).

In the case of Brazil, given the transnational origin of automobile assembly plants established here, this phenomenon developed with the same features. This form of management led to important changes in the relationships between the companies operating in this chain (Aguiar 2001; Bronzo, Arruda and Balbino 2005; Lima 2004; Salerno Marx and Zilbovicius 2002).

At the same time as these changes were taking place, new assembly plants were being established in Brazil, with the aim of producing and selling passenger vehicles. The changes in the management of supply chains were significant, especially in the restructuring of typical methods of production, changing from the Fordist style, with a large number of suppliers who had no involvement in manufacturing projects, little bargaining power and limited joint action, cooperation and long-term commitment (Di Serio, Sampaio and Pereira 2006) to a horizontal model based on modular production processes.

New organizational arrangements were created in this new configuration. One of its components is the first tier systems supplier, which has a new role to play in the automobile industry manufacturing process. Unlike other direct suppliers of automakers, this systems suppliers respond not by supply of

parts or components of the car, but for complete systems. The structure of this process is based on convergence of assemblers and first tier suppliers, since this increases the interdependence of the companies involved by raising volume and increasing operational integration, by the adoption of a lean management and manufacturing model (Salerno, Marx and Zilbovicius 2002).

According to Chopra and Meindl (2003), the deepening of relationships leads to the alignment of the individual strategies of the links in the supply chain with the competitive strategies of the whole chain. According to Bronzo (2001), at present, this type of alignment can be seen in the relationship between assembly plants and first tier supplier in the Brazilian automotive chain. These companies operate in a highly cooperative environment, where the first tier suppliers have the role of long-term strategic partners. This means that the assembly plants' logistic processes are simplified and this makes it easier to control the performance of these first tier suppliers.

However, there are few studies analysing the existence of alignment between the individual strategies adopted by the upstream links in the Brazilian automotive chain. In economic sectors which operate in a highly competitive climate, as in the case of the Brazilian automobile industry, cooperation between these upstream links is an extremely important factor for the competitive capacity of the chain as a whole.

The present study seeks to investigate whether the strategies of relationship management adopted by the first tier suppliers of the Brazilian automotive chain contribute to the process of expansion of the scope of inter-organizational strategic alignment in this supply chain. To this end, based on the premises of Network Theory, an investigation was carried out into the strategic alignment status of a sample of first tier companies from the automotive assembly supply chain along with their associated set of suppliers, by means of an analysis of how the relationships established between these companies are managed. A multiple case study was made of five of the FIAT Automobile Company's first tier suppliers – the leading assembler in the Brazilian market. All the units interviewed are located in the State of Minas Gerais, the headquarters of FIAT in Brazil.

This analysis has a potential contribution to make to the academic and scientific community's understanding of fundamental aspects of inter-organizational

relationships and to the improvement of company's practices in an extremely competitive environment. The study also has management implications as regards the activities of the purchasing function, the combination of resources and the coordination between the activities and the management of the connections between the other actors involved.

NETWORK THEORY AS AN ANALYTICAL STRUCTURE OF ORGANIZATIONAL STRATEGIES

Skjoett-Larsen (1999) discuss three different theories used in academic research on Supply Chain Management (SCM): Transaction Cost Analysis, Network Theory and Resource-based Management.

Transaction Cost Theory (TCT) has as one of its basic principles that economy is the best strategy and leads to efficiency and that a company should adapt to changing circumstances. However, this theory is criticised for dealing exclusively with economic aspects and for failing to include personal and social relations. According to this approach, external partners present a reasonable risk of opportunistic behaviour and the importance of reducing such risks is emphasised in its premises. According to Ellram (1991), the greatest risk faced by a supply chain management approach lies in the high potential for opportunism and that the best way to avoid such a problem is to choose one's partners in the supply chain with great care. TCT limits its scope to the level of relations between a company and its transactions with other companies with whom it has a close relationship.

The Theory of Resource-based Management is founded on three key concepts: resources, competencies and strategic assets. The main idea is that a company can be seen as consisting of a set of these three concepts (Barney and Clark 2007; Skjoett-Larsen 1999). The possession of scarce resources and abilities that are valuable and difficult to imitate comprise what the authors call "strategic assets", which include the relationships established with customers and key suppliers. This theory, however, has the characteristic of limiting its level of analysis to the internal aspects of companies.

Network Theory takes as its basic principle the understanding that individual companies need resources controlled by other companies and that access to these resources takes place by means of

interaction between them. This theory is therefore focused on the development of competencies in relationships with external partners in order to produce knowledge and create value. One of the central ideas of Network Theory is that a company is capable of using networks to create competitive advantage and of influencing not only those companies which are directly involved but also those which take part indirectly by means of the former, that is to say, the suppliers' suppliers and the customers' customers (Hakansson and Snehota 1995). Thus, an organization's performance does not only depend on its co-operating with direct partners but also on how many of these partners cooperate with their own partners. These conclusions justify the need to consider the Network level of analysis and not only that of the chain in order to explain relationships between companies (Skjoett-Larsen 1999).

The three theories have important implications for intra and inter-organizational studies. However, the dynamic and constantly changing competitive environment created by globalization, technological developments and changes in competitiveness, indicate that it is reasonable to suppose that the characteristics suggested by Network Theory are more appropriate for explaining or describing organizational phenomena, especially those involving relationships between organizations.

Network Theory posits that, in general, the relationships between companies constitute their most valuable resource, given that access to complementary resources held by other companies are an important asset. Skjoett-Larsen (1999) argues that another relevant aspect dealt with by Network Theory is the question of the power structure within a network, where different members have different degrees of power to address and influence other members' actions. It is this power structure which determines a company's role and position in relation to the network's other members. For this author, networks are created over time as a result of the investments made by members, whether they be individuals or organizations in relationships which, with the passage of time, tend to grow stronger and become stable.

This research is based on the premises of Network Theory. According to Skjoett-Larsen (1999) the fundamental aspect of Network Theory is the fact that individual companies need resources controlled by other companies and that the interaction between them is the means by which they gain access to such external resources.

Thus, companies should be seen as members of business networks which, in turn, consist of a large number of different types of company seeking to interact in search of solutions for their different problems. These interactions affect a large variety of other companies (Ford et al., 2003).

According to Olsen (2006) the main contribution of the first projects designed in line with this approach is the empirical evidence that there are stable, long-term relationships between customers and suppliers along with an analytical model that serves as a basis for the understanding of each individual relationship.

Hakansson and Snehota (1995) state that relationships are generally formed in a much wider context of interdependence and that the factors which affect them are frequently external to the actual relationship between two companies in a network.

Relationships are interconnected and their development and likely consequences cannot be completely understood if these connections are not taken into consideration. For example, the options offered by a company in a customer relationship depend on the relationship it maintains with its suppliers.

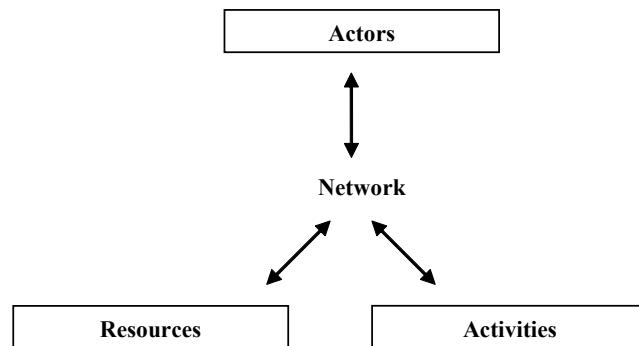
In addition to the attribute of interdependence, Gadde and Hakansson (2001) defend the idea that there are specific connections between the relationships a company establishes. Relationships are connected when one of them affects or is affected by events taking place in another relationship. A limited number of relationships usually have a significant effect on a company's market performance. Volume, market share, profitability and growth depend on how a company manages its relationships (Hakansson and Snehota 1995). However, at the same time, a company's performance regarding its total set of relationships affects its ability to perform in a specific relationship. There is, therefore, a direct connection between relationships and performance and, consequently, according to Gadde and Hakansson (2001), a company that wishes to optimize its performance should strive to establish connections between all its relationships.

The effect of this approach is far-reaching. A company may establish a connection between the relationships maintained with some of its suppliers and the relationship maintained with a strategic customer. Such relationships may, in turn, be affected by relationships established by the strategic customer and

its other suppliers or by one of these suppliers and its other suppliers or customers, thus producing an enormous chain of connections that may take in relationships that are indirectly connected (Hakansson and Snehota 1995). The structure brought together in this way creates a form of organization that is called "network" by these authors.

The network model in Figure 1 developed by Hakansson and Snehota (1995) shows the activities, the resources and the actors as three interdependent aspects of a network.

Figura 1 – The Network Theory Model



Source: Hakansson and Snehota (1995)

The Structure of Activities

Companies carry out a number of different internal activities with the aim of developing products or services, and of acquiring the materials or services necessary for the production, sale and delivery of these products or services. In accordance with the approach taken by Network Theory the focus of attention is placed on understanding the role of an individual company in the general structure of the companies making up what is called a "network", in understanding the way in which its activities affect the activities carried out by other companies and in understanding the way in which a company, in turn, is affected by the activities carried out by other companies (Gadde and Hakansson 2001).

Over time changes take place in this internal structure, making it necessary to modify or adjust the connecting activities, thus reflecting the need for coordination.

In addition to this, a company's performance is affected by the connection between its internal activities and other partners, and this means that links be-

tween internal activities is a factor which influences the productivity of the companies involved in the network as a whole (Hakansson and Snehota 1995).

Activities are carried out in either a sequence or a net, directly linked to a specific outcome (Gadde and Hakansson 2001). According to these authors, the connections between these activities in a chain or structure of activities may be more or less stable and the more stable the connection, the stronger the interdependence of the activities will be.

These connections are still a form of coordination. They are achieved by means of adaptation – mutual adjustments to the activities, products, management systems and production processes (Skjoett-Larsen 1999) – which have to do with the fact that such activities can be carried out in a standardized way in different situations, whereas other activities can only be carried out in one single way, depending on the company with which they are associated. These adaptations are the essential ingredient of inter-organizational relationships.

Adaptations made as a result of a relationship may be carried out by one or both of the companies involved but both of them will always be affected. They appear over a long period of time as a way of solving problems (Hakansson and Snehota 1995), a way of improving performance, in spite of there being costs (Gadde and Hakansson 2001), and as a form of utilizing the resources available within the network (Skjoett-Larsen 1999).

The Structure of Resources

No individual company on its own has all the resources which it requires in order to operate. It is therefore must interact with other companies to obtain access to the resources it needs. Companies supply resources to each other and, for this reason such resources are an important factor influencing business relationships (Hakansson and Snehota 1995).

The last-mentioned authors state that obtaining access to various types of resources – tangible and intangible – is an important source of motivation for establishing business relationships. They also state that such resources become integrated; transforming the relationship into a set of interconnected resources and that new combinations of resources may come into being as the relationship develops. Owing to this characteristic, a relationship may also be considered to be a resource in itself, an asset which

should be used in an efficient manner – perhaps the most important resource of all – capable of ensuring access to the resources held by other companies which affect the performance of any single company (Hakansson and Snehota 1995). According to the authors, these are unique resources which do not lose value when used but which more often than not increase in value with the passage of time.

The way in which resources are coordinated on the basis of existing relationships and internal resources is a reflection of both a firm's knowledge and skill in using and creating them, as well as the technological level it has reached. To the extent that this coordination develops, knowledge about how to supply and how to utilize the different resources and their characteristics also develops. Therefore, interaction with other companies leads to a learning process as to the best way of creating and making use of the combination of resources.

The Structure of Actors

Actors are defined as those member of a network of relationships, who, either individually or in concert, control resources and carry out activities (Brito and Roseira 2003; Olsen 2006). They have plans and goals, and make efforts to increase their control but do not work in isolation.

Actors involved in a network establish links which affect the way in which they perceive, evaluate and deal with relationships between them, with third parties and with each situation encountered in the course of their operations. In Hakansson and Snehota's (1995), opinion they develop to the extent that companies acquire confidence and commitment as a result of improvements in their relationships with each other. As a result of optimizing these links, companies become more committed to each other, giving priority to some instead of others in a constant process of constructing an identity which reflects these characteristics. The accepted identity is therefore reflects the level of connection established between two companies and is capable of strengthening or weakening the relationship. The development of confidence is a typical social process in the development of relationships and not only depends on direct interaction between the parties concerned but also on the perceptions about the relationship held by each of the parties with third parties.

Consequently, the behaviour of each of the actors in the process of interaction depends on the iden-

tity adopted in their other relationships, so each actor, to some extent, represents its counterpart in its relationships with third parties and these, for their part, perceive the relationship between these two partners as a fact (an established fact – as something real) and try to adapt themselves, thus creating a collective identity for the set of relationships, which is, by definition, unique (Gadde and Hakansson 2001; Hakansson and Snehota 1995). As a result, as the links are established, an organized structure of actors come into being – which the authors term a "network" – which changes as the actors are affected by the learning process.

Links are therefore a prerequisite for effective mutual learning, for development of the characteristics of the actors involved and for the mobilization of resources which are external in relation to them – a necessity in a changing environment. (Hakansson and Snehota 1995).

In short, the relationship between two companies will have a profile that expresses the level of the connections established between their activities, the combination between the structure of available resources and the links established between the actors. The status of this configuration at any one moment in time can be used to characterize the nature of relationships established between two companies. The interaction between these three aspects – links between actors, combination of resources and connections between activities – represent the motive force for the development of business relationships.

RESEARCH METHODOLOGY

General Characteristics of the Research

The aim of this research is to describe and evaluate, from the purchasing manager's point of view, the strategies for managing relationships with suppliers used by first tier suppliers in the Brazilian automotive supply chain. Setting the strategic limits in this way can be justified by the fact that it makes the direct approach with the managers of these operations more efficient in contrast to an approach which deals with higher levels in the hierarchy, which frequently do not deal directly with the object of analysis that is the target of this study.

On the other hand, studies show that the strategic role of the purchasing function has been strengthened in the new architecture of the chains and that it is an important factor that is directly involved in

the management of relationships (Burt, Dobler and Starling 2003; Monczka, Trent and Handfield 2002). According to this group of authors, the purchasing function has always been taken to be an accepted element in all companies with the following three main areas of attention:- a) obtaining good prices; b) preventing any operational stoppages due to disruption in the supply of materials and services; c) managing the company's stocks.

Strategies for Action

The chosen research strategy was multiple case studies, since projects which use this approach present more convincing results as evidence and, consequently, lead to the view that the overall study is more robust (Yin, 2005).

The data were collected from a sample of five industrial companies located in Brazil, which operate as suppliers of systems, modules and components to automobile assemblers. The most important manager of the purchasing function was interviewed in each of these companies. The research approach consisted of three distinct steps. The first of these steps was to survey the existing literature on the topics of supply chain management, buyer-supplier relationships, purchasing strategies, Network Theory and relationship practices in the international and Brazilian automotive chain.

The second step was to obtain the information required for the research. Semi-structured interviews were carried out using as the data-collection instrument a script created by the authors with open questions containing topics related directly to the chosen theme of the research. The script consisted of five different categories of analysis, each one containing some open questions. The categories are:- a) general characteristics of the company; b) the purchase function and coordination of the activities performed by the suppliers; c) the purchase function and combination of internal and external resources; d) the purchase function and links between the actors; and e) the purchase function and perceptions of the function of relationships. All the interviews were transcribed in accordance with these categories of analysis.

The unit of analysis of this study is the relationship maintained between the businesses of the first and second tiers in the Brazilian automotive chain, from the perspective of purchasing managers of the first tier company. The respondents hold the highest positions in Purchasing in the unit of analysis. This

choice resulted from the fact that, from the strategic point of view, Purchasing is a multifunctional process focused on management and developing integration with the overall set of activities and supplier's resource structure. It has the aim of obtaining competitive advantage from cost reductions, technological developments, improvements in quality, reductions in cycle times and improvements in delivery capability in order to satisfy customers' needs (Monczka, Trent and Handfield 2002).

The third step was the analysis of information by the method of *Content Analysis*. It consists of breaking down the structure and elements of the content in order to make its different characteristics clear and to extract their meaning (Laville, Dionne and Siman 1999). This method is useful, especially when the data have been collected in the form of discourse, that is, a set of words organised in such a way as to convey meaning, whether it be extracted from texts or documents or obtained by open questions in questionnaires or interviews.

The data collection instrument used made it possible for the researcher to produce an outline of the content of the interviews in order to rank it according to the previously determined categories of analysis. The aim was to identify the relationship between the strategies adopted and the expectations of strategic alignment in the automotive supply chain found in the literature on the topic. The strategy of *matching* was used for qualitative analysis of the content. This strategy consists of associating the data collected with a theoretical model – in this case Network Theory – with the aim of comparing them and assumes that there is a theory which the researcher has based his work on in order to elaborate a model of the situation under study (Laville, Dionne and Siman 1999).

The Analytical Model

The theoretical premises dealt with so far may be characterized in the following way (Skjoett-Larsen 1999): according to Network Theory, the dynamic relationships between actors provide support for partnerships by guiding the actions that seek access to heterogeneous resources. Thus, the predominant focus (the research's unit of analysis) which was seen to be the guiding factor for companies trying to access to the resources held by third parties and establish partnerships, determined the creation of the research instruments and schedule as well as the analysis of the content of the interviews.

For example, according to Bronzo, Arruda and Balbino (2005), the Brazilian automobile assembly plants maintain a highly cooperative relationship with first tier companies. According to these authors, there are signs that, for example, FIAT's logistic culture, developed during the last 30 years, and strongly based on principles of lean manufacture and supply, have been disseminated by means of the company's operations with its first tier suppliers. They also hold that the notable efficiency of these first tier suppliers in integrating internal and inter-organizational processes may be the direct result of FIAT's efforts to formalize its logistic structure.

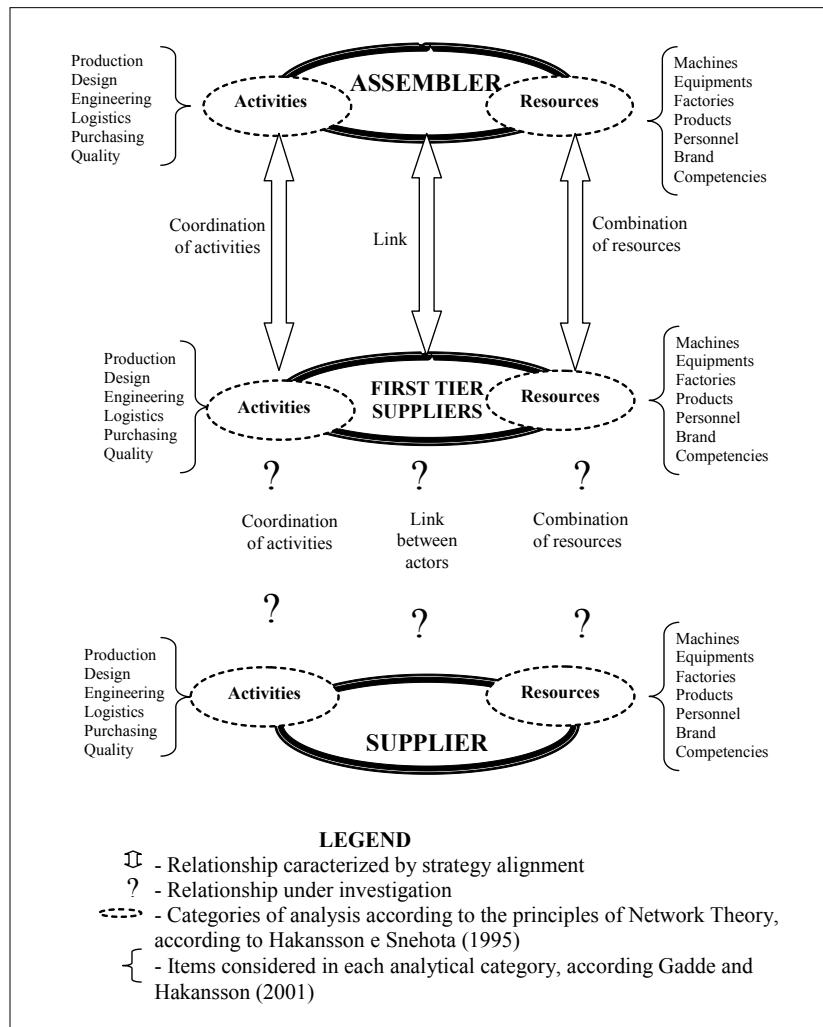
Strategic alignment of the automotive chain will take place if there is correspondence between the strategies adopted by each company with its different tiers. Therefore, in order to be able to show that this

alignment exists, the relationships established between the first tier suppliers studied in this research and their suppliers should be consistent with the principles of the relationships established between first tier suppliers and assembly plants.

This point will guide discussions about potential and real impacts on company performance, both individually and in the chains, not so much financial performance directly speaking, but performance in the management of logistic activities based on the purchasing function, and affecting strategies for the management of production, stocks, transport and information, for example.

Following this guideline, Figure 2 shows the analytical model of the research in schematic form.

Figure 2: Analytical Model of the Research



JOINT ANALYSIS OF THE CASES

All companies surveyed are systems suppliers of automobile assembly plants in Brazil. A direct consequence of the test sample used - for accessibility and convenience - was the fact that all units of analysis have as the main client FIAT Automóveis S/A, the leader in the Brazilian automobile market. The geographical proximity to the assembly is the main motivation of each company to justify its decision to settle in the state of Minas Gerais. The name of the companies will be omitted in this work at the request of the respondents, so preserving the confidentiality of data submitted.

Of the five companies surveyed, four showed that there was growth in the size of the supplier base in recent years, as can be seen in Table 1. This contradicts a trend identified by Monczka, Trent and Handfield (2002), who claim there is sufficient motivation for companies, in general, to adopt procedures to reduce the size of the supplier base. The increase in the supplier base possibly reflects the short maturity of the units surveyed, which still experiencing a phase of endogenous growth. A possible evidence of this fact is the case of the sample only company to have adopted a policy of reducing the supplier base, which has twice the length of existence in relation to the others - almost twenty years.

Table 1
Characteristics of the Companies in the Research

Companies (fictitious names)	Alfa	Beta	Gama	Delta	Sigma
Origin	Europe	Brazil	Europe	Europe	Europe
Employees	400	300	2000	540	600
Suppliers	200	120	65	80	100
Changes in the Size of the Supplier	Increase	Reduction	Increase	Increase	Increase
Age of the Unit (in years)	9	20	10	10	10

Source: Research Data.

There follows a presentation of the analytical categories defined according to the principles of Network Theory.

The purchase function and the coordination of suppliers' activities

According to the first tier suppliers, the increase in the level of demands made by assembly plants regarding the performance of first tier companies is the main factor influencing the way in which they carry out their internal activities. The factors that led to this new set of requirements are the policy of creating levels within the supplier base adopted by the assembly plants and the resulting rise in the level of integration between these companies and the first tier companies. Thus, the first tier companies were obliged to adapt their internal activities to the activities of the assembly plants in order to create complementarity in the chain of activities comprising the automobile manufacturing process. The Gama Company, for example, had to set up a branch within the FIAT plant in order to maintain sufficient stocks to satisfy the sequenced demand from the assembly plant during the course of the working day.

Naturally, these demands had an effect on the performance expectations brought to bear on the suppliers of components to these first tier suppliers. The companies interviewed reported that they expected their suppliers to make attempts to adapt, on their own, to the performance requirements they had imposed on the purchasing process. In fact, these demands were already an established feature of the business environment in the supply chain, since they are a consequence of the assembly plants' lean manufacturing and supply practices.

The connection between first tier suppliers' internal activities and those of their suppliers is a factor affecting the productivity of the companies involved. It is capable of influencing the performance of each participant, as well as that of the whole network (Hakansson and Snehota 1995). Such connections constitute a form of coordination that will make for optimisation of the available resources. Since the effectiveness of a purchasing strategy is directly associated with the management of the supplier base in order to obtain external resources that support the search for compatibility between internal capabilities and the competitive advantage sought by the company (Monczka, Trent and Handfield 2002), it becomes necessary for this function to act directly to coordinate these internal and external activities.

The purchasing function of the companies in the research acts discreetly to coordinate the suppliers' activities. In the majority of cases it takes on the job of

supervising the supplier's delivery performance in order to identify any possible delay that could paralyse the first tier supplier's activities. This conclusion derives from the observation that two companies – *Alfa* and *Beta* – do not consider that it is normal for them to interfere in the way in which their suppliers carry out their activities and they should intervene in a limited fashion in specific areas of the logistic and manufacturing process. Moreover, companies *Beta* and *Sigma* point out that the main mechanism used for coordination is to impose demands on suppliers that are similar to those imposed on them by FIAT. In a similar way, company *Delta* holds that the main mechanism for coordination is communication of quantities and delivery dates. As this respondent acknowledges, credit for this initiative belongs to FIAT and it only remains for *Delta* to replicate the data as rapidly as possible.

This discrete operation of the Purchasing function therefore contradicts the expectation that it will be used to coordinate suppliers' activities in the way indicated in the literature (Burt, Dobler and Starling 2003; Monczka, Trent and Handfield, 2002), especially those considered to be strategic and in competitive environments – exactly as the automotive industry may be described.

When any coordinating activity is actually established by the first tier suppliers, the main motive is to reduce the purchasing cost of components. This is the reason why company *Alpha* is setting up a collection system with its suppliers using the milk-run method where it takes responsibility for managing transport costs in exchange for discounts on the purchasing price of components.

This fact demonstrates the existence of a mutual adjustment process in the performance of activities, known as adaptation (Skjoett-Larsen 1999), which develops as a way of utilizing the available resources and improving the companies' performance (Gadde and Hakansson 2001). With a similar purpose in mind, company *Gama* established a warehouse in São Paulo in partnership with a third party transport company with the aim of reducing transport costs by consolidating the freight received from suppliers. In this situation, the company began to carry out a new set of internal activities – for example, management of supply logistics – relieving suppliers of certain activities in order to improve its performance by reducing resupply costs and lead time.

Another important reason for establishing coordination procedures consists in ensuring that delivery dates are complied with, a relatively sensitive issue for first tier suppliers, since assembly companies operate in a lean management and supply environment. Companies *Beta* and *Delta*, for example, gave information about the practice of intervening in suppliers' distribution activities in cases where specific delivery is urgent. Company *Sigma* reported that when they face disruption of supplies, the moulds, which are their property, are sent to another supplier who can deliver the components on time.

Relationships typified by a considerable level of involvement between companies lead to continuous changes in internal activities in order to rationalize the way in which they are carried out, thus making the process of co-ordination with external activities easier (Gadde and Hakansson 2001). In this study, the only attempt to carry out internal rationalization was the case of a company that set up an e-commerce site. The objective of this site is to standardize the activities resulting from procurement procedures and reduce transaction costs. None of the other four companies, however, reported having found any need to alter the way in which they carry out such activities in order to rationalize them.

In the same way, constant changes in manufacturing activities – the result of interaction between actors – are an important indicator of coordination of the activities carried out by two companies in a relationship (Ford *et al.* 2003). For these authors, the majority of technical developments should not be attributed to individual companies but mainly to joint developments, made possible by co-operative relationships. However, there were few reports of joint development of new products. Such developments were restricted to the case of *Gama* Company, where this was brought about by the assemblers' approval policies for components.

The *Beta Company* reported three situations where they intervened in their suppliers' production activities with the aim of increasing the quality of the products supplied. In all these situations, the supplier was called upon to alter some internal process, in order to guarantee an improvement in the quality of the packing, the storage or the component. However, it may be concluded that the intervention took place because a performance standard was imposed, and without any joint activity on the part of those involved.

The purchasing function and the combination of internal and external resources

One of the ways of improving the efficiency of an organisation's activities is to coordinate a company's internal resources and the external resources of its supplier base (Gadde and Hakansson 2001). Therefore, managing the interface between internal and external resources is one of the purchasing function's most important tasks. It consists of assessing the level of complementarity of these two sets of resources and optimising the use made of them in achieving the company's final goals.

The companies studied were almost unanimous in identifying the structure of their manufacturing process as the main internal resource for ensuring their success in serving FIAT's needs. The manufacturing structure may be defined as the set of resources comprising one or more manufacturing plants located in geographical proximity to the FIAT assembly plant, with sufficient capacity to deal with the required volume of production, sufficient flexibility to deal with any changes in the assembly plant's product mix and with the qualified personnel that are required in order to carry out the necessary operational activities.

The only exception to this statement is Company *Gama*, which stated that its competence in developing complex systems was its most valuable resource. It was in this way that the company managed to maintain its position in the automotive supply chain – it is a supplier for both FIAT and VW – even though it maintained links with large companies that are both competitors and strategic suppliers. These competing companies have a more robust resource structure than Company *Gama* and, in addition to this, manufacture internally some of the components that are an essential for the production of systems supplied to the assembly plants, whereas Company *Gama* has to obtain such components from these companies. However, from the assembly plants' point of view, they do not have the same expertise as Company *Gama* in developing and assembling the automotive systems obtained.

In order to operate, companies need resources controlled by third parties and so they interact with them as a way of obtaining access to the resources (Hakansson and Snehota 1995). Having possession of valuable resources, therefore, influences the type of link that is established between companies in business relationships.

From the point of view of first tier companies, the most valuable external resource is a supplier's manufacturing capability, that is, it should have a structure that is able to make products available at the right time, with the shortest possible delivery time and at the lowest possible cost. This approach is directly influenced by the need for first tier suppliers to serve the assemblers in compliance with the strict performance criteria imposed by these companies. The first tier suppliers were unanimous in stating that it was of vital importance to establish relationships with suppliers which would ensure that the requirements of punctuality, manufacturing capacity, price and flexibility were met.

Companies should combine their internal resource structure with that of their suppliers, since this is the only way to become more efficient and responsive to customers' requirements (Hakansson and Snehota 1995). The purchasing function should play a very special role in this aspect, since it is only by means of such joint projects with suppliers, the coordination of activities and the establishment of solid links with other actors that a company is able to provide an uninterrupted flow of the resources that are necessary for satisfactory performance (Gadde and Hakansson 2001).

However, the purchasing function in the companies studied makes little effort to coordinate available resources, an activity that would be an important factor in creating capacity for innovation. They all reported that they only followed up on orders and put pressure on suppliers to comply with delivery dates in order to ensure access to the necessary resources.

Companies *Alpha* and *Sigma* reported that when the supplier has any difficulty in meeting the agreed delivery dates, they look for alternative suppliers who can rapidly provide similar resources.

Company *Beta* also emphasized the need to take steps to ensure that there is an uninterrupted flow of supplies, and intervene in the supplier's distribution procedures as a way of reducing the lead time for delivery of resources. For this company, existing suppliers have failed to meet this expectation of uninterrupted supply. The purchasing function suggests that an increase in the stocking safety margin is the solution to this problem and is able to guarantee protection against shortcomings in the suppliers production and/or distribution procedures.

One of the types of activity carried out by the purchasing function in order to combine internal and external resources consists of assessing the available alternatives to see if it is possible to internalize activities or, inversely, to externalise them, as a means of ensuring the ideal combination of complementary resources (Gadde and Hakansson 2001). The companies reported that there had not been any intervention in the last few years by the purchasing function to change the location of any manufacturing activity.

Another of the activities of the purchasing function that could improve the combination of resources is to set up joint projects that allow growth of the suppliers' manufacturing and logistic activities in order to make it easier to access and coordinate resource structures. There were no reports of any joint projects involving first tier suppliers and their suppliers aimed at making improvements to the suppliers' manufacturing process. The only activities carried out with the aim of ensuring access to essential resources concerned the management of distribution processes by two first-tier companies – *Alfa* and *Gama* Companies – where it was established that collection would be carried out by the milk-run method. These actions cover only a small part of the flow of materials between companies and are adopted mainly in order to reduce costs, since, in these cases, the most rapid method of accessing the resources is not a priority. Companies *Beta* and *Delta* only intervene in logistic procedures when something out of the ordinary happens to supplies. Company *Sigma* does not interfere in suppliers' logistic procedures at all.

The purchasing function and the links between actors

The identity of a company is defined by its position in the structure of actors in a supply network (Hakansson and Snehota 1995). According to the authors, this position is influenced by the set of internal activities it carries out and by the way the company coordinates the complementarity of these activities with those of the other actors with whom it establishes relationships. In addition to this, its identity is also influenced by the structure of its resources, as well as by the way the external and internal structures match. The identity of the first-tier suppliers in this study is the result of their manufacturing capacity and their level of specialisation in the supply of automotive systems on time, according to an acceptable standard of quality and at a price that fits in with the assemblers' cost targets.

For the suppliers of components, the identity of first tier suppliers comes from the position that they hold in the supply chain. This fact produces a number of effects on the standard of relationship established between first tier suppliers and their suppliers. The main one is the low level of influence that suppliers have on the identity of the first tier suppliers, which, as a rule, attribute this identity to the ownership of resources and to the specialized nature of their activities, both of which are valuable to the assembler. Given that the identity of a company in a relationship reflects the level of connection established between the two companies (Hakansson and Snehota 1995), on the basis of the analysis made of the development of the identity of the companies involved in the relationships under study, it is concluded that there is a low level of interaction between the companies. The fact that the identity of the component supplier is of little importance in creating the identity of the first tier supplier is essential in order to explain the low level of interaction identified between these actors.

As a result of this effect, the purchasing function in first tier suppliers utilizes communication of this identity to suppliers in order to ensure compliance with supply agreements and, principally, to avoid the disruption of supplies. This aspect of the component supplier's identity, which is of little importance in construction of the first supplier's identity, is essential in order to explain the low level of interaction found in the relationship between these actors.

The second effect is more in evidence in the case of Company *Gama*. The fact that the assembly plant has to approve the components which it uses to produce systems has a direct influence on the autonomy of the first tier suppliers. The apparent result is a conflict of interest between the companies which are in a relationship with each other, since the first tier suppliers believe that their position in the commercial negotiation process has become weaker, especially, regarding procedures for choosing suppliers.

On the other hand, the necessity for approval encouraged a certain amount of coordinated development between Company *Gama* and its suppliers, in order to obtain the assembly company's approval for new components. In these cases, the companies involved adapt their development and manufacturing activities and bring together tangible and intangible resources in order to innovate. These procedures shape the identity of these companies and strengthen their position in the automotive supply chain. This mobilization of activities and resources described

in the case of Company *Gama* should be considered the most collaborative relationship found in the five cases studies and also the one with the most potential for producing superior results for the companies involved.

However, this does not appear to be the case in the relationship between this same Company *Gama* and the suppliers which are also its competitors. In this situation, it seems that the conflict of interest is stronger. It is certainly the case that the potential for interaction is blocked by this conflict. In such situations, Company *Gama* was only interested in obtaining approval for components at the lowest possible cost.

Company *Alfa* used its identity as a means of obtaining reductions in the cost of obtaining components. Setting up a site for procurement aims to reduce transaction costs while not leading to any activity that would increase the level of interaction with the supplier base. As a result of the interest which suppliers show in making a differentiated level of service available, the purchasing function has the role of communicating the company's identity as a means of increasing the ability to secure this type of advantage.

Company *Beta* reported some problems with large suppliers which did not give value to the identity of the first tier suppliers – the explanation is the low level of dependence of these suppliers on the automotive supply chain. This is an important example of how a company's identity is an important factor in establishing a collaborative relationship. The absence of this recognition produced a conflicting relationship between the parties. The solution, according to what was reported, is to involve the assembly plant in the relationship, since it is an actor which is able to equalize the balance of power. In this case, it seems that the ability shown by the purchasing function in mediating cooperation and conflict between partners is no longer able to produce significant results for the relationship.

The first tier suppliers assert that the standard of relationship they have established with suppliers is satisfactory and that it contributes to strategic alignment in the automotive supply chain. More specifically, they hold that the strategic alignment exists when:- the supplier provides good service (Company *Alfa*); when there is also investment on the part of the suppliers – who, furthermore, have already received a warning that they should invest (Compa-

ny *Beta*); when the first tier supplier uses its power to force delivery dates and consignment on suppliers (Companies *Gama* and *Sigma*). Company *Delta* held that alignment was of a satisfactory standard and that it was therefore not necessary to adopt any practices in order to develop suppliers.

The function of the relationships established

The importance of a relationship for the individual company, for a pair of companies and/or for a network basically depends on how many resources are produced, how many new combinations of activities arise out of the interaction between the companies and how much knowledge is obtained as a result of this set of factors (Hakansson and Snehota 1995). The set of reports presented in this study indicates that the potential for the production of resources and coordination of activities is low. It is found that companies react to potentially conflicting situations – a possible delay in delivering a batch of components is a clear example of an event that has an immediate potential for generating conflicts.

Capacity for innovation and an increase in productivity are of fundamental importance for actors' competitiveness, whether considered individually, in pairs or as a network, but both these factors are far removed from the present situation of the group analysed – referring here to the relationships which are the object of this study, established upstream by this group. The dynamic aspect of networks should never be underestimated, since new competencies are expected in the future, as well as new sets of resources and new combinations of activities. The whole of this scenario suggests that strengthened links should be established with the most important actors as a prerequisite for competitiveness, since these relationships provide the means of transforming the threat presented by the dynamism of the market into an opportunity.

Systematization of the Results

On the basis of the information obtained from the cases studies, it was possible to identify and analyze the strategies used by the purchasing function to manage relationships with suppliers from the sample of first tier companies. Table 2 shows the results obtained set out according to the analytical categories based on Network Theory used in the research schedule.

Table 2 – Classification of the Results According to the Categories of Analysis

RESULTS	PREMISES OF NETWORK THEORY
The purchasing function and coordination of the activities carried out by suppliers	
Principal mechanism of coordination is the imposition of supply requirements	Coordination is obtained on the basis of the incidence of changes in the structure of activities
Discreet activity of the purchasing function in the coordination of activities carried out by suppliers..	The purchasing strategy is an important tool for coordinating activities.
Coordinate activities focusing on cost reductions and guarantees of access to resources in a timely manner	Focus on the improvement in performance of both parties and of the network as a whole. The connection between activities is a factor in productivity.
Low incidence of changes in carrying out internal activities.	Constant search for rationalization of internal activities.
Few reports of joint development of new products – restricted to only a few cases.	Joint technical development and development of new products, in search of innovation.
The purchasing function and the combination of internal and external resources	
External and internal resources coordinated via operational purchasing practices.	Joint projects as the most effective means of ensuring access to the resources required by the company.
The purchasing function is not involved in the change of location for carrying out manufacturing activities.	The search for the ideal way to coordinate structures frequently requires internalization or, inversely, the externalisation of activities.
The purchasing function and the link between the actors	
Suppliers have little influence on the construction of a company's identity.	The companies strengthen their links with suppliers and strategic customers in order to construct an identity that reflects the commitment between them.
The purchasing function and the perception of the function of relationships.	
Low potential for the creation of new resources and the coordination of activities of companies and their suppliers.	Relationships with greater level of interaction and cooperation are capable of producing important effects on the performance of each of the actors involved, on each pair of companies and on the network as a whole.

Source: Produced from the results of the research

CONCLUSIONS

By analysing the cases investigated in this study, it was found that the strategies adopted by the first tier companies in the Brazilian automotive chain for managing the relationship with their suppliers are not based on the premises of Network Theory. Thus, these strategies are not aligned with the assemblers' strategies for managing the relationship with their suppliers.

This non-alignment seems to be explained by the fact that the strategies used by these two sets of com-

panies for managing business relationships cannot be explained by the same theoretical approach. The Network Theory approach seems to have greater explanatory power for the assembler-first tier supplier relationship characterised by strong cooperation, joint activity and long-term commitment.

The focus of Network Theory analysis is on the inevitability of joint inter-organizational relationships being set up as a factor in the differentiation of ownership of adequate resources and carrying out internal activities in an effective fashion. This was not what was found in the relationships investigated.

The companies investigated in this study are first tier suppliers in the Brazilian automotive chain. The lean production procedures and reconfiguration of the supply chain put in place by the automotive assembly companies caused significant changes in the way in which activities are carried out in these first tier suppliers (Bronzo 2001; Lima 2004; Salerno, Marx and Zilbovicius 2002). For example, the activities that have to do with manufacturing and distribution processes underwent significant alterations as a result of the change in the policy of creating levels in the assembly plants' supplier base. Some activities were transferred from the assembly plants to the suppliers – for example, the assembly of automotive systems – while others moved in the opposite direction – in many cases assembly companies took over the management of distribution processes, adopting milk-run collection systems, for example. First tier suppliers commercial activities were dedicated almost exclusively to attending to the needs of the automotive assembly companies as a result of the increase in volume of trade arising from the move to higher levels in the automotive chain and the increase in the volume of vehicle production which took place in recent years (Bronzo 2001; Lima 2004; Salerno, Marx and Zilbovicius 2002).

First level suppliers ceased to be ordinary suppliers of auto parts. Their new functions involved acquiring components, assembling complete systems and distributing them on time to the assembly plants production lines. These companies were successful in complying with demands for new standards of manufacturing flexibility, availability of stocks and frequency and punctuality of delivery. In this way, a new set of abilities and a new resource structure emerged to enable the first tier suppliers to successfully adapt to the activities they had to carry out in order to comply with this new responsibility. As a result, a new standard of deeper relationship

was established with the assembly plants in order to coordinate the set of competencies possessed by the first tier suppliers with those held by the latter companies.

In addition to this, assembly plants and first tier suppliers have sought to develop new joint competencies (Bronzo 2001), and this has created a need to share abilities and modification in the structure of activities, something that is only possible in an environment where there are strong cooperative links between the actors. Incorporating suppliers into projects for developing new vehicles from the initial stages is also a strong indication of the level of interaction established in this level of the automotive supply chain.

It is for these reasons that it is held that the standard of relationship established between the assembly plant-first tier supplier dyad is satisfactorily explained by the premises of Network Theory.

As far as the standard of relationship established by first tier suppliers with their suppliers is concerned, it was found that these companies are mainly concerned to use their identity as power against their suppliers in order to obtain supply of components at the right time and at satisfactory prices. They consider that the communication of this identity is an instrument which is sufficient to motivate suppliers to specialise in the supply of the complementary resources required by the first tier suppliers.

The results also indicate that there is little interference from suppliers concerning the identity of first tier suppliers. This phenomenon indicates that there is a low level of interaction between the companies investigated as regards relationships with their suppliers. According to Network Theory, companies that involve themselves in cooperative relationships become more committed to each other in a process of constructing an identity that reflects the type of connection established between them (Skjoett-Larsen 1999).

Modifications in activities are not normally found in the companies investigated in this research, except in the case of some activities connected to storage and transportation of components from suppliers to first tier suppliers. Thus, there are no signs that these companies jointly develop a new structure of activity relating to manufacturing processes. A very small number of joint projects were set up to develop a dynamic structure of new resources in the second tier supplier-supplier dyad. In these cases, the supply of

complementary resources occurs in a less cooperative environment where the link between the parties only becomes stronger because of the identity of the first tier company, without questions such as joint learning playing a part as motivating factors in the standard of relationship established.

The function of the relationship maintained between first tier suppliers and their suppliers has less impact than would be expected in the three areas analysed by Network Theory – function for the individual company, for pairs of companies and for the network. Each of the companies in the research attributes its identity to possession of competencies and internal resources, such that its performance is only affected by the relationships maintained in regard to the suppliers' capacity of delivering components at the right time, at a competitive price and in compliance with an acceptable level of quality. The low level of interaction between the pairs of companies also has little impact on the level of company performance. As far as the function for the network is concerned, the opportunity to create capacity for innovation on the basis of a more collaborative interaction between the parties involved, is lost.

In the relationships in this research, the purchasing function acts operationally with a short-term approach, since it is primarily concerned to ensure that there is an uninterrupted flow of resources. There is evidence, based on this research, that the purchasing function of the companies in the research has little effect on the development of the supplier's capabilities and competencies.

During the last few decades, the purchasing function has shown a strong potential for contributing to the acquisition of competitive advantages in a wide variety of organizations and supply chains (Burt, Dobler and Starling 2003; Monczka, Trent and Handfield 2002). In order to achieve this, it requires to act in accordance with the model of strategic action which focuses on searching for solutions which ensure the flow of resources to a company. It also needs to take steps to coordinate the activities carried out internally with those carried out by suppliers and to establish satisfactory links with actors making up the circle of relationships in which the company participates (Gadde e Hakansson 2001; Monczka, Trent and Handfield 2002). If they act in this manner, first tier suppliers will make a contribution to the strategic alignment of the automotive supply chain.

A limitation of this research is the fact that it has investigated the relationship between the companies only from the point of view of the ones from the first tier, without considering the perception of companies of the second tier.

REFERENCES

Aguiar, Edson. C. (2001) *Relações de Fornecimento na Indústria Automobilística Paranaense: o Caso Chrysler-Dana*. Porto Alegre: UFRG Sul.

Baily, Peter, David Farmer, David Jessop and David Jones (2000), *Compras: Princípios e Administração*. São Paulo: Atlas.

Barney, Jay and Delwin Clark (2007), *Resource Based Theory: Creating and Sustaining Competitive Advantage*. Oxford: Oxford University Press.

Brito, Carlos and Catarina Roseira (2003), "A model for the understanding of supply chain networks". *IMP Group*, <http://www.impgroup.org> Accessed August 06, 2007.

Bronzo, Marcelo. (2001), *Gestão da rede de suprimentos e estratégias de segmentação de fornecedores na cadeia produtiva da Fiat Automóveis S.A.* Belo Horizonte: UFMG.

Bronzo, Marcelo, Ricardo T. Arruda and Eder L.M. Balbino (2005), "Organização da função logística dos grandes contratantes da cadeia de suprimentos da Fiat Automóveis do Brasil". Brasília: Anpad.

Burt, David, Donald Dobler and Stephen Starling (2003), *World class supply management: the key to supply chain management*. 7th ed. New Delhi: Tata McGraw-Hill.

Chopra, Sunil and Peter Meindl (2003), *Gerenciamento da Cadeia de Suprimentos: estratégia, planejamento e operação*. São Paulo: Prentice Hall.

Di Serio, Luiz C., Mauro Sampaio and Susana F. Pereira (2006), "A evolução dos conceitos de Logística: um estudo na cadeia automobilística no Brasil". Salvador: Anpad.

Ellram, Lisa and Laura Birou (1995), *Purchasing for the bottom line impact: improving the organization through strategic procurement*. Tempe: McGraw Hill.

Ford, David, Lars-Erik Gadde, Håkan Häkansson and Ivan Snehota (2003), *Managing Business Relationships*. Chichester: John Wiley & Sons Ltd..

Gadde, Lars-Erik and Håkan Häkansson (2001), *Supply network strategies*. Chichester: John Wiley & Sons.

Häkansson, Håkan and Ivan Snehota (1995), *Developing Relationships in Business Networks*. London: Routledge.

Krause, Daniel R. and Lisa M. Ellram (1997), "Success factors in supplier development". *International Journal of Physical Distribution & Logistics Management*. v. 27. n. 1. p. 39.

Krause, Daniel R. and Robert B. Handfield (1999), "Developing a world class supply base". *CAPS Focus Studies*.

Laville, Christian, Jean Dionne and Lana M.de C. Siman (1999), *A construção do saber: manual de metodologia da pesquisa em ciências humanas*. Porto Alegre: Artmed.

Lima, José C. de S. (2004), *Um estudo sobre a reconfiguração da função compras em empresas do setor automotivo*. São Paulo: USP.

Lummus, Rhonda R. and Robert J. Vokurka (1999), "Defining supply chain management: a historical perspective and practical guidelines". *Industrial Management & Data Systems*. n. 1. p. 11-17.

Monczka, Robert, Robert Trent and Robert Handfield (2002), *Purchasing and Supply Chain Management*. Cincinnati: Thomson Learning.

Ogden, Jeffrey A. (2006), "Supply base reduction: an empirical study of critical success factors". *Journal of Supply Chain Management*. Vol. 42, n. 4.

Olsen, Nina V. (2006), "Incremental Product Development". *IMP Group*.

Salerno, Mário S., Roberto Marx and Mauro Zilbovicius (2002), "A nova configuração da cadeia automotiva no Brasil: rumo a um polo de excelência em projeto e produção?" *Universidade de São Paulo*, <http://www.poli.usp.br/pro/cadeia-automotiva> Accessed August 12, 2007.

Skjoett-Larsen, Tage (1999), "Supply Chain Management: a new challenge for researchers and managers in Logistics". *International Journal of Logistics Management*. v. 10. Issue 2. p. 41.

Trent, Robert and Monczka, Robert (1998), "Purchasing and supply management trends and changes throughout the 1990s". *International Journal of Purchasing and Materials Management*. Vol. 34, n. 4, p. 2-11.

Yin, Robert K. (2005), *Estudo de caso: planejamento e métodos*. 3th ed. Porto Alegre: Bookman.

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