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**IDENTIFYING DECISION FACTORS FOR LOGISTICS OUTSOURCING IN THE BRAZILIAN  
AUTOMOTIVE INDUSTRY**

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**ABSTRACT**

Logistics outsourcing is a business practice adopted by a growing number of organizations. The logistics outsourcing process is heavily supported by the literature. Nonetheless, a wrong decision can be a source of corporate problems that may lead to the increase of logistics costs, affecting the company's competitiveness and image. There is a high incidence of unsuccessful cases in outsourcing agreements, mostly due to failures in the decision making process. This fact highlights the complex nature of the logistics outsourcing decision and the lack of understanding, on the part of executives, concerning the variables that affect the decision process. In this context, the present research reports on a study developed in the Brazilian automotive industry on logistics outsourcing according to the perspective of the hiring company. The focus of the article consists in identifying the main factors which the organizations of this particular sector should analyze in the decision making process of logistics outsourcing, using qualitative techniques.

Key Words: Logistics. Outsourcing. Decision making process. Third-party logistics service providers (3PL). Automotive Industry.

## 1. INTRODUCTION

Logistics outsourcing has become a need for the majority of organizations due to their fierce competition (SCHOENHERR, 2010). Companies which are leaders in the market, such as Cisco Systems, Ford and Fiat, have outsourced great part of their logistics processes (EXAME, 2008) aiming to make their supply chain more agile, cost efficient and competitive (GUNASEKARAN; IRANI, 2010). Some other companies search in outsourcing a counterpoint to dedicate in depth to their core business (BOT; NEUMANN, 2007) or to supply demands of core competences in logistics (SOHAIL; SOHAL, 2003; BOER *et al.*, 2006).

A logistics outsourcing project may include from traditional transportation services to complete outsourcing of the logistics process. Initially, only the transportation activities were outsourced; later, storage and supplies management have also been added. Currently, outsourcing involves activities such as transportation management, purchases and administration of the orders cycle (NEVES, 2008). As a consequence, the industry of logistics operators increased globally to 10% rates from 1995 to 2007 (BOT; NEUMANN, 2007) and in 2008, despite the economical crisis, it increased 6.5% (DIBENEDETTO, 2009). In Brazil, this sector presents expressive growth as well. In the period from 2006 to 2007, this industry revenue presented increase of 20% (CEL/COPPEAD, 2008). However, some companies decide not to outsource their logistics due to: (i) disbelief in costs reduction and in the increase of service level; (ii) belief that the service will be better performed internally; (iii) threaten of know-how loss; and (iv) loss of control over the logistics activities (SHARIF *et al.*, 2007).

Another element which can influence on the decision is the unsuccessful logistics outsourcing experience of some companies. Twenty to 25% of these agreements failed in up to two years and 50% became unsuccessful until five years after their establishment (CRAIG; WILLMOTT, 2005). Iañez and Cunha (2006) and Iskar *et al.* (2007) highlight that such failure has been mainly attributed to deficiencies in the decision making process. The decision to outsource logistics is complex, involving several attributes, both quantitative and qualitative, which depend on each other (WATER; PEET, 2006).

In this investigation, the outsourcing decision for third party logistics service providers (3PL) is assessed according to the perspective of the hiring company, having the context of the Brazilian automotive industry as the example. The third party logistics service providers – 3PL – were chosen for assessment due to their remaining current trend in the national market

(NEVES, 2008). The automotive industry choice is justified by the importance of logistics for this sector. Besides the complexity of its supply chain, which involves the planning and manufacturing of over 10 thousand distinct items, the logistics sophistication is vital for the automotive industry.

The main aim of the present investigation was to make explicit the major factors to be assessed by executives from the automotive industry involved in the decision making of logistics outsourcing and to answer the following question: which elements should be considered in the decision making process of logistics outsourcing? The logistics managers and decision makers will be able to refer to the set of factors proposed for the structure of the decision making process in their organizations and therefore reduce the risk of taking wrong decisions.

## 2. LOGISTICS SERVICES OUTSOURCING

The bibliographical research revealed that the studies on logistics outsourcing have rapidly spread in the last fifteen years, as corroborated by Maloni and Carter (2006). Nonetheless, the majority of investigations are of exploratory nature, since the research field is still crawling. It was identified that the main topics studied on logistics outsourcing refer to: (i) classification of logistics service providers; (ii) the benefits expected with logistics outsourcing; (iii) the outsourcing agreements; (iv) the results of the outsourcing process; (v) the assessment of the logistics service providers market and its trends; (vi) the relationship between logistics service providers and the hiring companies; (vii) the assessment of the logistics providers efficiency; (viii) the selection of logistics service providers; and (ix) the selection of logistics activities to be outsourced.

It was verified the scantiness of researches – such as Boer *et al.* (2006), Ivanaj and Franzil (2006) and Neves (2008) – which exclusively approaches the logistics outsourcing process. Gunasekaran and Irani (2010) also point out the lack of researches which deal with the outlining and assessment of the logistics outsourcing decision. Moreover, it was observed that the majority of the studies refer to the selection of logistics service providers and little attention is given to the logistics outsourcing decision. Only the investigation by Kremic *et al.* (2006) worked with the decision making factors on logistics outsourcing; however, the study focused only on the theoretical approach. The present article returns to the theoretical discussion, being original though as an empirical study which explores the issue using multiple case studies as grounding. Additionally, it proposes a set of decision making factors.

### 3. LOGISTICS OUTSOURCING DECISION

Some authors consider the decision of hiring logistics activities as a variation of the classical decision of make or buy (MONCZKA, 2005). Such decision can be especially made through two kinds of assessment (DISERIO; SAMPAIO, 2001), namely:

- Analysis of the transaction cost: it has its theoretical rooting on the Transaction Costs Economics (TCE), which considers rational limitation and opportunism as essential pre-requisites on the economic actors engaged in transactions (BARNEY; HANSEN, 1994). It approaches the firms' limits and presents markets and hierarchies as alternatives to governing mechanisms. Thus, the decision about the governing, and, in this investigation, the decision on the logistics outsourcing, aims to reduce to a minimal cost the transaction problems created by limited reasoning as well as opportunism (WILLIAMSON, 1995).
- Strategic analysis: composed of models from the strategic school. The neoclassical model, developed by Porter (1985), focus on the selection of strategic positions in the business with the aim to acquire competitive advantages which basically depend on the market position as well as on the goods. Conversely, the models rooted on the Resource Based View – RBV, consider that competitive advantage derives from capacities and resources (RODRIGUEZ; ROBAINA, 2006). This approach focuses the effort and investments of the organization on its essential competences.

Eric (2000) compares the TCE and RBV theories concerning outsourcing. According to the author, the TCE considers the outsourcing decision as tactical, adopting production and transaction costs minimization as the main criterion for decision. Thus, the benefits expected from outsourcing are higher efficiency and savings, while the highest risk is dependence. According to the RBV, the outsourcing decision is considered strategic, being the creation of value its main decision criterion. The benefits expected are higher competitive advantage and development of capacities, while the risks involve losses of essential capacities. The RBV and TCE present some contradictory points since they have distinct emphases (MARSHALL *et al.*, 2007). However, in the outsourcing decision case, the number of authors who are for the complementation nature of the two views is increasing (ARNOLD, 2000; ERIC, 2000; MADHOK, 2002; MARSHALL *et al.*, 2007).

### **3.1 Outsourcing according to the TCE perspective**

In the last 25 years, the TCE has been the predominant theoretical approach for the outsourcing decision (BALAKRISHNAN *et al.*, 2008). It was presented by Williamson in 1971 and is an extension of the investigations by Coase (1937) which define transaction costs as derived from agreements exchanges on goods or services between firms. Williamson (1995) identifies the critical dimensions for characterization of the transaction costs, describing the main governing way for transactions. The author explains that the transaction costs are the reason why the companies substitute the internal organization for the market. This approach is used by Skoejtt-Larsen (2000) when dealing with the difficulties in the agreements on logistics outsourcing.

Holcomb and Hitt (2006) have assessed how the resources and availability of providers influence on the outsourcing process. The resources specificity, that is to say, the investments related to a specific transaction and with limited value when used in alternative applications, is one of the main factors for the increase of the transaction cost. Thus, such investments reduce the probability of the company in reaching for outsourcing. Additionally, the low availability of skilled outsourcing providers gives space for opportunistic attitudes from their side, and consequently, increase the transaction cost. Therefore, the availability of providers affects the probabilities of the company in considering outsourcing.

The search for lower costs was for a long time the main aspect of the decision for outsourcing use, including in logistics. However, the assessment exclusively through the TCE causes the company to ignore influences caused by its governing method, the values concerned with the exchange transactions and other influences created in the activities' value chain. According to Costa (2007), the exclusive use of economical criteria limits the quality of the decision assessment and the recommendation is that companies should use aspects intrinsic to their own competence for the decision on outsourcing, based on the RBV.

### **3.2 Outsourcing under the RBV perspective**

Authors such as Barney (1999), Gainey and Klass (2003) and Grant (1991) state that the outsourcing decision is based on the theoretical core of the RBV. Holcomb and Hitt (2006) mention three assessment factors for outsourcing based on the RBV:

- Complementary capacities: occurs when one skilled capacity, provided by an outsourcing source, adds up value if used in connection with company's internal capacities. The need to access external capacities, complementary to the internal ones, increases the probability of the company in searching for outsourcing services;
- Cooperative experience: refers to the previous experiences of the company in searching for skilled firms. Repeated experiences generate a trust bonding, reduce the difference in information and may provide knowledge on the capacities of the hired provider;
- Strategic similarity: reflects on the similarities in the organizational culture and procedures. Such similarities facilitate the understanding of the aims of outsourcing and sharing of procedures, stimulating hence the outsourcing.

Additionally, Rodriguez and Robaina (2006) highlight the concept of core competence as the most complete in order to explain the reason why companies choose to outsource, since he considers that organizations should only invest in activities which constitute their core competences and decide to outsource the remaining ones.

Nevertheless, authors such as Barney and Arian (2001) and Priem and Butler (2001) criticize the RBV since the mere possession of valuable and rare resources, many times unique and of difficult substitution, does not guarantee competitive advantages and the creation of value. Sirmon *et al.* (2007) stress the importance of the integration of the RBV with the theories of the competitive environment. Therefore, despite its theoretical grounding basically from RBV and ETC approaches, the present study has also found support in the concepts of the Contingency and Institutional Theories to propose the set of factors on decision making in the logistics outsourcing.

#### 4. DECISION FACTORS IN LOGISTICS OUTSOURCING

It is considered, based on the proposal by Kremic et al. (2006), that the logistics outsourcing decision process is rooted on the analysis of five factors: (i) Strategy; (ii) Cost; (iii) Characteristics of the Logistics Process; (iv) Environment; and (v) Logistics Providers. The decision factors and items proposed by the investigation are a combination of factors mentioned by Willcocks et al. (1995); Yang and Huang (2000); Yang and Chaudhry (2003); Rodriguez and Robaiana (2006); Holcomb and Hitt (2006); Ivanaj and Franzil (2006) and Kremic et al. (2006). Within these investigations, only the research by Kremic et al. (2006) refers to logistics outsourcing; the remaining ones are from the Information Technology or Manufacturing Outsourcing Fields. Table 1 presents the decision items grouped according to their factors and theoretical grounding.

**Table 1** – Decision making factors for logistics outsourcing

Factors	Items	Theoretical grounding
Strategy	Core Competence	Resource Based View
	Access to resources	Resource Based View
	Strategic risk	Resource Based View
Cost	Logistics costs	Transaction Costs Economics
	Investment in assets	Transaction Costs Economics
Characteristics of the Logistics Process	Complexity	Resource Based View
	Specificity	Transaction Costs Economics
	Value generation	Resource Based View
	Difficulty in imitating/substituting	Resource Based View
	Performance	Resource Based View
	Quality	Resource Based View
	Flexibility	Resource Based View
Environment	Operational risk	Resource Based View
	Internal political environment	Contingency Theory
	Isomorphism	Institutional Theory
Logistics Providers	Uncertainty about the internal and external environment	Transaction Costs Economics
	Offered services	Resource Based View
	Offered resources	Resource Based View
	Geographical coverage	Resource Based View
	Experience of the providers in the market	Resource Based View
	Image	Resource Based View

- **Strategy**

*Proposition 1: The decision making process for logistics outsourcing is based on the factor strategy.*

The decision making process is grounded on the assessment of decision factors of strategic nature (KREMIC *et al.*, 2006), being assessed from: (a) core competence; (b) availability of resources of the logistics process; and (c) strategic risks involved in the logistics process. Core competence is a theoretical concept of the RBV, where the processes which generate core competences should not be outsourced (QUINN, 1999). Still according to the RBV, through outsourcing, companies search for external resources and capacities in order to improve their performance. The increasing demand for sophisticated technologies as well as skilled logistics services stimulate outsourcing of logistics processes for more technically skilled and with more resources providers (PERSSON; VIRRUM, 2001). It is also stressed that the risks of logistics operation from the moment of the outsourcing decision are shared between the company and provider, resulting in strategic risks for the hiring part (SINK; LANGLEY, 1997; SLYWOTSKY; WEBER, 2007). Kremic *et al.* (2006) highlight that the main strategic risks involved in logistics outsourcing decision have not been identified; however, they try to number these risks: (i) risk of increase of logistics costs; (ii) risk of reduction of flexibility; (iii) risk of loss of control of outsourced activities; (iv) risk of dependence on providers; (v) risk of loss of the organization image due to possible low performance of the provider; (vi) risk of loss of clients due to low performance of the provider; (vii) risk of decrease in self-esteem of employees; and (viii) risk of loss of key-market information obtained from the direct contact with the employees.

- **Costs**

*Proposition 2: The decision making process for logistics outsourcing relies on the factor costs.*

The decision for logistics outsourcing, according to TCE, aims to reduce transaction problems created by limited rationality and opportunism to a lower cost (WILLIAMSON, 1995). Thus, the decision making process for logistics outsourcing should include the analysis on the factor Costs, through the assessment of: (a) need for investments in assets for the process performance; and (b) logistics cost of the outsourced process. The outsourcing aims to reduce logistics costs and release the resources to other activities. Therefore, processes with high cost and which require high investments are more likely to be outsourced as well (SCHOENHERR, 2010).

- Characteristics of the logistics process

*Proposition 3: The decision making process for logistics outsourcing relies on the factor characteristics of the logistics process.*

The different characteristics of the process may interfere in the result of the decision making process for logistics outsourcing. The process's characteristics should be considered during the decision making from the analysis on: (a) specificity; (b) value generation capacity; (c) performance; (d) quality; (e) flexibility; (f) difficulty in substituting and imitating the logistics process; (g) complexity; and (h) operational risk of the logistics process.

According to the RBV perspective, the value created, specificity, difficulty in imitating and difficulty in substituting are important concepts to the classification of the processes according to the generation of core competences. Consequently, these concepts influence on the decision for outsourcing. The TCE approach also considers that asset's specificity is one of the main causes for the increase in the transaction cost (HOLCOMB; HITT, 2006).

Logistics outsourcing, according to the RBV, is an opportunity to improve processes with low performance and quality standard (ANDERSON, 1997), and constitutes in an effort to increase flexibility (PERSSON; VIRRUM, 2001). In this article, the concept of flexibility includes flexibility concerned with demand, with operation and with availability of resources.

Fleury (1999) and Razzaque (1998) state that the growing complexity of the supply chain collaborates to the tendency to logistics outsourcing. The logistics operations have become more complex, in whatsoever that some companies find difficulty in managing them and therefore, reach for outsourcing (SOHAIL; SOHAL, 2003). Thus, the companies reduce complexity of their operations and transfer the focus to their core competences. Moreover, in the case of outsourcing, the operational risks of the logistics process start to be shared between the provider and the hiring company, mitigating hence the operational risk (SINK; LANGLEY, 1997; PERSSON; VIRRUM, 2001).

- Environment

*Proposition 4: The decision making process for logistics outsourcing relies on the factor environment.*

The factor Environment has its conceptual grounding in the Contingency Theory. The decision making for logistics outsourcing should involve the analysis of the factor Environment from the: (a) internal political environment of the organization; (b) success of

organizations which outsourced the logistics process (isomorphism); and (c) uncertainty about the environment.

The internal political environment of the organization is represented by the engagement from the high administration and the remaining collaborators, which is a crucial element for the outsourcing success (IAÑES; CUNHA, 2006). Nevertheless, the outsourcing many times does not receive enough support due to the lack of reliability on external companies and the feeling of threat to one's job.

Another relevant concept to the outsourcing analysis is the isomorphism, whose rooting is the Institutional Theory. In the case of the logistics outsourcing, the mimetic isomorphism is considered, since the organizations opt for outsourcing simply because other firms were successful when delegating the logistics process to providers (JHARKHARIA; SHANKAR, 2007).

Concerning logistics, uncertainty is associated with the company's difficulty in estimating its future needs or the external uncertainties (IVANAJ; FRANZIL, 2006). The level of uncertainty also influences on the decision for outsourcing, especially in long-term agreements. (KREMIC *et al.*, 2006).

- Logistics providers

*Proposition 5: The decision making process for logistics outsourcing relies on the factor availability of logistics providers.*

The factor Logistics Providers has its conceptual grounding in the Contingency Theory, since the characteristics of the providers market is a dimension from the external environment, as well as in the ETC, for its relation to the availability of providers. Low availability of skilled outsourced professionals gives chance to their opportunistic behavior, consequently increasing the transaction cost (HOLCOMB; HITT, 2006). McGinnis *et al.* (1997) consider the availability of a logistics provider who fulfills the needs of the organization as the main motivation for outsourcing. However, it is necessary that the providers meet the demand criteria of the hiring company. Therefore, the decision making process for logistics outsourcing should comprise the analysis on the logistics providers market, where the availability of the providers who offer the required services and resources, geographic coverage, providers experience in the market and good image (reputation) will be verified.

## 5. RESEARCH METHOD

The research methods used in the present article were of qualitative nature. Initially, exploratory interviews were conducted (STAKE, 1995; GIL, 2007) and multiple case studies were subsequently developed (BENBASAT *et al.*, 1987; YIN, 2001).

The exploratory interviews were structured according to a script and had mean duration of an hour. The four interviewed executives presented the following profile: (i) act in large size enterprises which provided the logistics outsourcing; and (ii) participated in the decision for logistics outsourcing. The executives present mean experience time of 10 years in the logistics department of leading companies in the market enterprises, with income similar to R\$ 1.5 billion, in different sectors, though (motors and parts, petrochemical and industrial gas). The aim of this phase was to understand the structure of the logistics outsourcing process, as well as whether the dimensions identified in the literature were adherent of this research.

Later, a multiple case study was conducted with the aim to assess the research proposals and generate hypotheses (YIN, 2001). The same research procedures were applied in two companies, following a study protocol. The assessment units are large size companies from the automotive industry which outsourced logistics activities for 3PL providers. The choice for companies from the automotive industry is justified by the strategic role logistics plays in competitiveness and performance of this sector. The automotive supply chain is extremely complex due to its amplitude at the competition level to the numbers from the productive sectors involved as well as its global penetration (GEIGER, 2005). One of the assessment units is an automotive manufacturer and the other is an important provider for the automotive chain, serving the demand for motors of vehicles, agricultural, industrial and marine segments. The selection of interviewees was performed by the companies, following the requirement that they worked with logistics and that they had participated in the decision making process for outsourcing. Table 2 shows characteristics of the interviewees. This work was held in the year of 2009.

**Table 2 – Characteristics of the interviewees in the case study**

Assessment Unit	Position	Time in the company	Time which has been working with logistics
General Motors	Supply Chain Coordinator	15 years	8 years
	Logistics Coordinator	10 years	7 years
	Logistics Analyst	5 years	5 years
MWM International	Logistics Analyst	2 years	9 years
	Logistics Supervisor	9 years	20 years
	Planning and Materials and Logistics Manager	15 years	12 years

The face validity and content of the interview script was performed by three specialists in logistics. The external research validity was evidenced by: (i) selection of consolidated leading companies in the market; (ii) choice for experienced interviewees, involved in the decision for logistics outsourcing criteria; (iii) performance of the exploratory interviews phase and (iv) performance of two case studies. The data triangulation was done by the document research, researcher’s direct observation in the companies and interviews, determining hence the construct validity.

#### 6. ASSESSMENT OF THE INTERVIEWS WITH THE EXECUTIVES

The research model was discussed and assessed by the interviewees, who agreed on the decision factors and items proposed by the research model. An important fact revealed in this phase was that the assessed companies, when outsourcing, are not worried about reducing problems related to labor issues; contrary to what is reported in the international literature (BOYSON *et al.*, 1999; PERSSON; VIRUM, 2001). Due to the Brazilian legislation specific details, outsourcing may imply in complex labor issues. It is stressed that the set of factors selected in the literature has not been altered, which reveals its representativeness. Finally, it was highlighted by the executives that the decision making process for logistics outsourcing comprehends multi-dimensions and that the preliminary model is suitably composed.

#### 7. ASSESSMENT OF THE MULTIPLE CASE STUDY

Characteristics of the Brazilian automotive industry are presented as follows. Subsequently, for each case study, characteristics of the company and how the decision making process for outsourcing took place are approached. In the last section, the results crossing as well as assessment of the decision for logistics outsourcing factors and items are presented.

## **7.1. Brazilian automotive industry**

ANFAVEA (National Association of Automobile Manufacturers) divides the Brazilian automotive chain in two segments: (i) automotive vehicles, which include light vehicles, trucks and buses; and (ii) engines for agricultural machinery, related to tractors, cultivators, combine harvesters and backhoes (COSTA, 2005). The Brazilian automotive chain, including vehicles, auto parts and agricultural machinery, includes 24 brands and nests the main global groups of the sector. These companies have 45 industrial units located in the states of Bahia, Goiás, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul and São Paulo (ANFAVEA, 2006).

The Brazilian automotive industry completed 50 years in 2005. Over this period, 46 million units of cars, light commercial vehicles, trucks and buses, in addition to 1.8 million units of agricultural machines and tractors have been produced. In 2005, the automotive chain offered 106 thousand jobs, produced 2.5 million vehicles and exported US\$ 11.2 billion, with 81.9% of this value from the auto vehicle segment (ANFAVEA, 2006). The automotive industry has considerable participation in the national tax collection, generating a contribution of R\$ 21 billion in 2005, besides being responsible for 4.5% of the national GDP and for 13.5% of the Brazilian industrial GDP (GUARNIERI; HATAKEYAMA, 2005).

In the last years, many foreign companies from the automobile field built plants in Brazil, having the growing internal market as public and the strategic position of the country in Latin America as an advantage. The Brazilian automotive industry had the first semester of 2008 as the best semester in history in terms of sales and production, besides having grown to the rate of 25% (EXAME, 2008a). In the first semester of 2008, the exportation volume of agricultural machinery equals to US\$ 14.2 billion, presenting expansion of 12% over the first semester in 2007 (ANFAVEA, 2008). However, the main element which improved sales in Brazil was the credit. The economic crisis restricted credit and the sales scenario in 2009 was worse for the Brazilian automotive industry (EXAME, 2009).

## **7.2. Case 1: Automotive manufacturing company**

The organization hires 266,000 employees and manufactures cars and commercial vehicles in 35 countries. The Brazilian subsidiary is the largest operation of the corporation in South America and the second largest operation outside the United States. In Brazil, the industry counts with three industrial complexes added to a distribution center. The researched unit, opened in 2000, hires 5,200 direct and indirect employees, besides 18 sistemists. The

complex makes a closed condominium between the factory and its systemists, where the involved parts keep their identities and share costs and expenses.

The interviewees stress the strategic role of logistics for the company; however, it is not considered a core competence of the assessed unit. The unit's logistics activities are performed by providers, and the logistics team is in charge of the chain administration, monitoring and follow-up of the outsourced activities. The logistics team is composed of only seven employees. The hierarchic level of the logistics main executive is of high management.

The unit outsourced its logistics activities for a single provider until 2002; however, the organization chose to consolidate the activities of its three plants in groups, according to their technical similarities, to be outsourced by skilled providers. Thus, the company reached for better quality and performance of offered services, besides cost cuts. Currently, the plant counts with services of five providers, who play the role of: (i) supply and milk-run distribution of the components of non-systemist providers; (ii) full load transportation haulage; (iii) express delivery and aerial transportation and contingency logistics; (iv) international logistics in MERCOSUR; (v) remaining international logistics activities.

Table 3 summarizes the main characteristics of the decision making process for logistics outsourcing in the company.

**Table 3** – Characteristics of decision making for logistics outsourcing in the automotive company

Logistics process previous to the outsourcing	The logistics activities have been outsourced since the opening of the unit.
Decision makers	The decision followed the organizational practices, since the other plants of the company also outsourced the logistics operations. The logistics department of the organization is responsible for the follow-up and monitoring of the outsourced activities.
Decision making process for logistics outsourcing	Outsourcing is a trend in the automotive industry. The factories focus on their core-business working in activities concerning the final assembling of the vehicle, marketing and sales. Hence, the activities which are not core competences, despite being strategic ones, are outsourced or transferred to suppliers.
Involved risks in the logistics outsourcing process	The interviewees reported that the loss of control of the logistics activities added to the low performance of the provider are the main risks caused by logistics outsourcing. However, the company tries to minimize them through careful follow-up and monitoring of the outsourced activities, besides the planning and organization of the supply chain.
Expected benefits from the logistics outsourcing	The three interviewed executives mentioned: focus on the core-business; reduction of logistics costs; reduction of investments in assets; resources availability for other activities; substitution of steady for variable costs; higher performance of the logistics operations and higher quality of the logistics services.

### 7.3. Case 2: Supply company in the automotive chain

The studied organization directly participates in the automotive supply chain, fulfilling the demand for motors. The company is a leader in the MERCOSUR in the motors manufacturing, being a reference in the development of diesel technology (MULTITRANSPORTE, 2007). The company has 2,500 collaborators acting in 4 plants and finished the year of 2007 with net turnover of US\$ 790 million (FATOR BRASIL, 2008).

The assessment unit has a logistics department, composed of three supervisions: Internal Logistics, Expedition and External Logistics. The External Logistics is divided in three sectors: Importations, Exportations and Transportation (Supplies and Distribution). The most part of the outsourced logistics activities is responsibility of the supervision of the External Logistics: consolidation and packaging activities, transportation, milk run system, storage, load consolidation, fleet managing operations, reverse logistics and information technology. The company currently works with 20 different 3PL.

Table 4 summarizes the main characteristics of the decision making process for logistics outsourcing in the organization.

**Table 4** - Characteristics of the decision making for logistics outsourcing in the automotive company

Logistics process previous to the outsourcing	The organization had most part of its logistics activities outsourced to a single provider, but the results were not satisfactory.
Decision makers	The logistics management itself makes the decisions concerning outsourcing according to its needs.
Decision making process for logistics outsourcing	The reasons which led to outsourcing of such activities range according to their characteristics. Outsourcing of the storage process was encouraged by the lack of space to keep the inventory internally. The milk run system requires specific knowledge and therefore, it was outsourced to a provider with experience in this process. Preference was reported for outsourcing activities whose operations are external to the company.
Involved risks in the logistics outsourcing process	The main risks are related to the dependence of the logistics provider and to the possibility of bad performance from his/her side.
Expected benefits from the logistics outsourcing	The organization chose to outsource logistics with the purpose to obtain more flexibility, velocity and performance, to reduce operational costs and to fulfill the need of investment on assets, to substitute the steady for variable costs, to focus on its core competences and to have more availability to processes, services and latest generation technology.

#### **7.4. Factors of the Decision Making for Logistics Outsourcing: comparative assessment of the cases**

This section presents the comparative assessment of the case studies for each proposed factor, evidencing the aspects which came out from the assessment results of the case studies.

- **Strategy**

Proposition 1 states that the decision process for logistics outsourcing is based on the assessment of strategic factors, having the following items as a starting point: core competence; availability of resources of the organizational logistics process; and strategic risks involved in the logistics process of the organization.

When the cases are assessed, it can be observed that the logistics activities outsourced by the organizations are considered complementary competences. The companies intend to transfer the logistics process responsibility to skilled providers and focus on their core competences. Quinn (1999) points out the focus on the core competences as the main strategic factor which stimulates logistics outsourcing. . In the example of the automotive company, the performance of the internal logistics operations is considered unsustainable, since it would imply in great concentration of competences and resources, which is not justified because logistics is not a core competence of the organization. Therefore, the case studies corroborate the RBV theory, which considers that only processes which do not generate core competences are options for outsourcing (RODRIGUEZ; ROBAINA, 2006).

It was verified that the companies chose outsourcing in order to have access to resources (IT, human resources and equipment) they did not have before. The greatest advantage mentioned by the executives is the access to such resources with variable costs and with no need of investments.

Logistics outsourcing implies strategic risks. The risks which most worry the executives involved in the outsourcing decision of the assessment unites are: risk of dependence on the providers; risk of low performance from the provider; and loss of control of the outsourced activities. Such risks are concerned with the dependence of the organization on the providers. The assessed companies are aware of the risks involved in the process and do not consider them an obstacle, since they try to manage and control these through careful selection and follow-up processes of the providers.

- **Cost**

The second proposition states that the decision making process for logistics outsourcing relies on the factor “Cost”; both logistic cost and investments in assets for the logistics operations cost.

It was observed during the cases assessment that the executives are concerned about the reduction of logistics costs. The majority of the expected benefits with the outsourcing, according to the executives, involve financial aspects such as: reduction of logistics costs; reduction of investments; availability of resources for other activities; and substitution of steady costs for variables costs. The result is in concordance with the TCE perspective, which states that logistics outsourcing has the aim to reduce transactional problems to a lower cost (WILLIAMSON, 1995).

In the case studies development, the logistics costs were assessed as a single item. However, such costs are composed of different portions. Chopra and Meindl (2006) classify them in inventory, transportation and storage costs. According to Bowersox and Closs (2001), the inventory and transportation costs are the main portions of the matrix of the total logistic cost. Moreover, it is also worth mentioning that the assessed companies present decrease in need of investments and consequent release of resources for core competences as the main idea behind their logistics outsourcing processes.

- **Characteristics of the logistics process**

The third proposition relies on the assessment of the characteristics of the logistics process: specificity; value; performance; quality; flexibility; difficulty in substituting and imitating; complexity; and operational risk. It is worth observing that none of the assessment units considered all items which compose the factor “Characteristics of the logistics process” in their decision making process.

The decision for outsourcing of a process is directly related to its characteristics. The case of the supply company of the automotive chain evidences that the reasons which led to the outsourcing of different activities changed according to their own characteristics.

The assessed companies are leaders in the market and possessed high quality and performance logistics services and despite of that, chose the outsourcing. The outsourcing success depends on maintenance or improvement of the performance and quality standards. Thus, the relevance of these items in the decision making for logistics outsourcing becomes justified.

There are two theoretical views which relate complexity to logistics outsourcing. In this investigation, it is followed authors such as Fleury (1999) and Razzaque (1998), who state that the process complexity stimulates the outsourcing process. The two cases reinforce this hypothesis. The logistics process of the automotive company is extremely complex, and its internal performance becomes unsustainable.

It is observed in the assessed cases that the outsourced activities are not difficult to be imitated or substituted. The interviewed executives consider the availability of providers capable of performing these activities satisfactorily. Thus, the case studies are in concordance with the RBV, which states that processes which correspond to specific capacities of difficult substitution or imitation should not be outsourced. The capacity to generate value, as well as the difficulty to imitate or substitute, is a relevant characteristic for the classification of the processes according to the generation of core competences. The RBV theory defends that the higher the value of the process, the lower the probability to outsource. The logistics processes of the assessed companies aggregate value to the organizations; however, they still chose to outsource their activities. This fact is due to the fact that the value generated is not high enough to make this process into a core competence, but rather, a complementary competence.

In the studied cases, a high level of specificity of the process is observed, which makes its outsourcing difficult. The companies demand a series of resources from providers, but such resources may be used in alternative applications. Thus, the processes outsourced by these companies do not present high specificity. Consequently, the cases are according to the perspectives of the TCE and RBV which preach that processes with high specificity reduce the probability to outsource (HOLCOMB; HITT, 2006; RODRIGUEZ; ROBAINA, 2006).

- **Environment**

Proposition 4 relies on the factor Environment, which should be assessed through: internal political environment of the organization; success of the organizations which outsource the logistics process (isomorphism); and uncertainty about the environment. It was observed during the assessment of the two cases that the organizations received support from the high administration for logistics outsourcing. It can be concluded hence that the practices are in accordance with the recommendations from the literature. Iañes and Cunha (2006) considered the high administration engagement crucial for the success of the logistics outsourcing process. Ren *et al.* (2010) corroborated the correlation between high administration engagement and performance and quality of the logistics outsourcing process.

Logistics outsourcing is a common practice and is disseminated in automotive companies, being accepted in all their levels. The interviewees from the supply company of the automotive chain highlight the importance of the support from the high administration for the outsourcing success.

It is observed that the support from the remaining employees is frequently not considered in the decision process. Generally, the employees feel threatened by the possibility of losing their jobs, and hardly support outsourcing, a fact which usually leads to a negative impact in the self-esteem of the collaborators who remain in the company. Therefore, it is crucial that the companies have a mitigation plan for relocation of the employees who would be dismissed.

In the automotive chain, outsourcing was strongly influenced by the success obtained by other companies. Due to successful cases in some companies, the high administration decided to analyze the viability of logistics outsourcing through benchmarking in several companies. The mimetic isomorphism can be observed here when companies leaders in the market or competing companies become successful in the outsourcing experience. Thus, it became important to share the item “Isomorphism” in “Success obtained by companies leaders in the market” and “Success obtained by competing companies”.

The automotive market is strongly influenced by the economical environment for being susceptible to uncertainties and contingencies of the external environment. Therefore, the assessed companies from this segment highlight the risk involved in the investments dedicated to the logistics process, once their volumes are prone to great variations. As can be seen, the assessment units chose to outsource processes which are susceptible to strong uncertainty from the external environment, which are results contrary to the recommendation in the literature. Kremic *et al.* (2006) and Ivanaj and Franzil (2006) discuss that the tendency to outsourcing is lower in cases which involve a high level of uncertainty, especially in long-term agreements, as the logistics outsourcing agreements.

- **Logistics providers**

The fifth proposition relies on the assessment of the market of logistics providers, who should: offer the required services; offer demanded resources; assist the required geographic coverage; have experience in the industry of the hiring part and have good reputation (image) in the market. The interviewed executives considered the availability of providers capable of efficiently performing the outsourced activities an essential factor to be assessed in the

decision for logistics outsourcing. The logistics outsourcing would be impossible without the availability of providers who offer the demanded services and resources, assist the desired market, have good reputation (image) and experience in the market. Thus, the organizations would have to develop the competences to internally carry out their logistics operations.

## 8. CONCLUSIONS OF THE RESEARCH

The case studies enabled us to verify the representativeness of the factors of the research model. However, when these cases were studied in detail, it was verified that some items are more carefully assessed by the organizations than others. The content assessment reveals that depending on the logistics activity outsourced, different resources play more or less important roles in the process. The most relevant resources for the outsourcing process pointed out in the assessment are: (i) specific equipment for the logistics activities; (ii) information technology resources; and (iii) human resources. Thus, the item Access to Resources from the factor Strategy was divided in Access to Equipments, Access to Information Technology and Access to Human Resources.

The case studies evidence the relevance in identifying and assessing the strategic risks in the decision making for logistics outsourcing, besides the need of confronting them with the expected benefits with the process. The five items related to the strategic risk considered by the executives as the most influential in the decision for outsourcing are: (i) risk of losing control of outsourced activities; (ii) risk of losing clients due to low performance of the provider; (iii) risk of losing organizational image due to bad performance of the provider; (iv) risk of losing information due to less frequent contact with clients and (v) risk of dependence on the logistics provider. Therefore, the strategic risk is represented by these new five items.

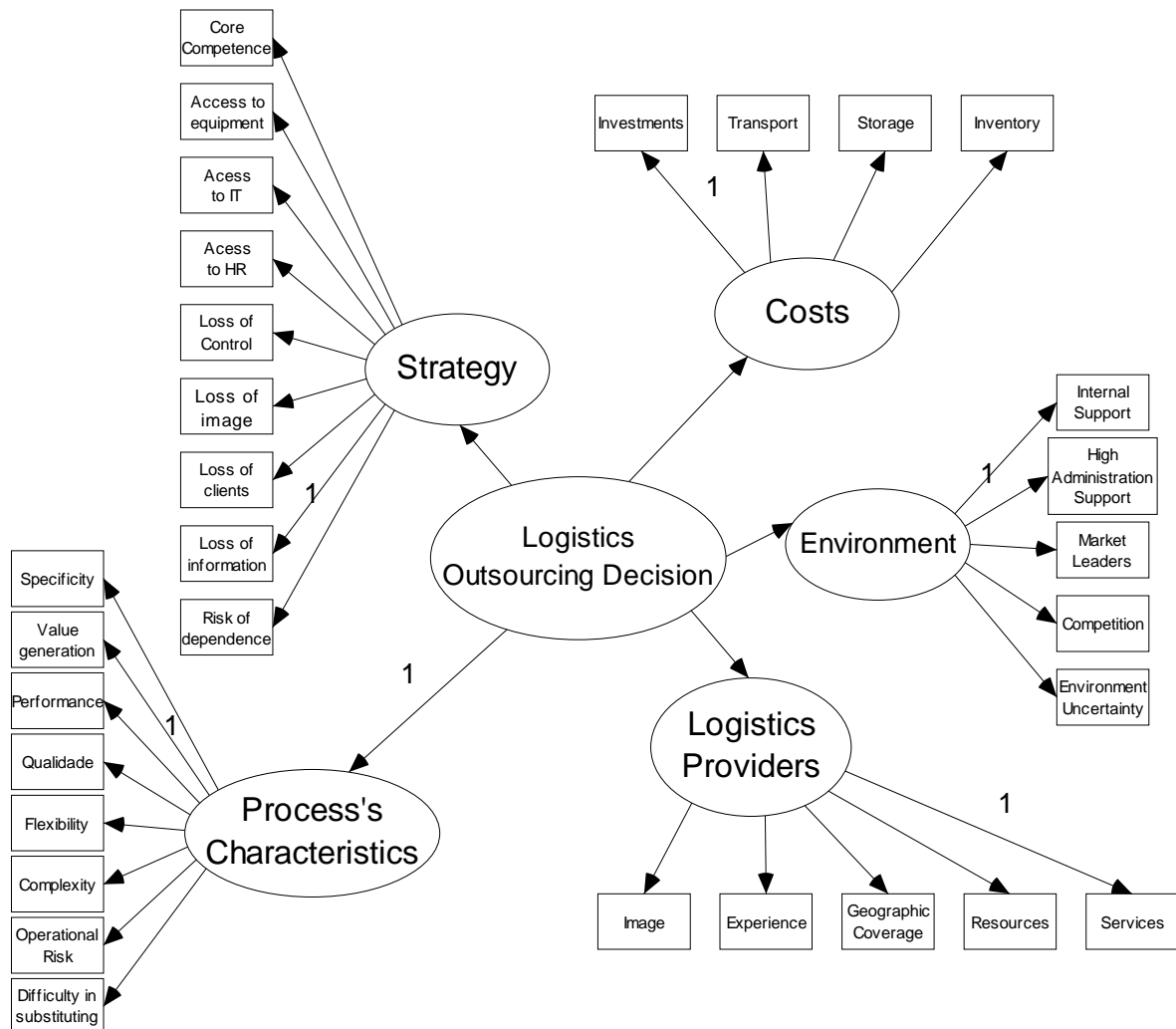
The same partition process occurred with the item Logistics Cost, which was divided in: storage costs, inventory costs and transportation costs. The data assessment highlighted the importance of the different portions of the logistics cost: in a company where the storage cost represents an expressive percentage of the logistics costs, the influence of this cost portion will be higher for the logistics outsourcing than the remaining ones. Consequently, it was observed the need to assess the logistics costs in their different portions.

The case studies assessment shows that the support from high administration is crucial for the logistics outsourcing decision. However, the support from the remaining employees is not considered by the assessed organizations. It is difficult for the organization to gain support from the remaining collaborators in the beginning of the outsourcing process due to the threat

of job cuts. Nevertheless, the case studies identified that the internal environment becomes more favorable as the outsourcing also becomes a disseminated practice. The differences related to the support from the high administration and the remaining collaborators are evident for the decision making for the logistics outsourcing. Thus, the item Internal Political Environment was substituted for the constructs: Support from High Administration and Support from Employees of the Organization. Such division distinguishes the actors involved in the outsourcing process within the organizational environment. It was also observed that success obtained by leading companies in the market, from the logistics outsourcing practice, encourages the decision for outsourcing by organizations from the sector as well as outside it.

The assessment on the qualitative study results led us to perform alterations in the research model, which changed from 5 factors and 21 items to 5 factors and 31 items. Five items of the theoretical model initially proposed (“Access to Resources Devoted to Logistics”, “Strategic Risk”, “Logistics Costs”, “Internal Political Support” and “Mimetic Isomorphism”) were divided in 15 new items, which, according to the interviewees, allow a more detailed structure of the decision making process. Such alterations do not aggregate new concepts to the model, but bring a higher level of details to the assessment. Figure 1 illustrates the relationships between the factors and items of the decision making process for logistics outsourcing.

**Figure 1: Decision Factors for the Logistics Outsourcing after Qualitative Research**



Finally, it can be concluded that the decision for logistics outsourcing actually occurs from the assessment of the five factors proposed: Strategy, Costs, Environment, Logistics Providers and Process' Characteristics. Therefore, the five research propositions were emphasized by the qualitative research, so that they become research hypotheses which will later be able to be corroborated through the development of surveys.

## 9. FINAL REMARKS

In order to better understand the decision making process for logistics outsourcing from the perspective of the hiring company, this research raised the following question: which are the factors and items the executives should analyze in the decision process for logistics

outsourcing? The research question is justified by the number of unsuccessful cases of logistics outsourcing as well as by the difficulty observed by the executives in identifying factors which aid in the structure of the decision process so that it fulfills the organizational needs. A great amount of lack of success related to the logistics outsourcing is attributed to deficiencies in the decision making process (IAÑEZ; CUNHA, 2006; KHAN; SCHRODER, 2009).

It was identified that a wrong decision for outsourcing may be crucial for the company due to the possible increase in logistics cost and flaws in the process (performance and quality), affecting organizational competitiveness and image. The errors are consequence of decision's complexity which involves a large amount and variety of factors, both quantitative and qualitative, and interdependent on each other. Moreover, it was observed that the decision makers are unfamiliar with or find difficulty in defining the items which should be really assessed.

Finally, the multiple case studies allowed the identification of a set of five factors composed of 31 decision items from which the organizations decide for the logistics outsourcing. Nevertheless, the research developed is of qualitative nature, so that it does not allow measuring the real importance of the items in the outsourcing decision. Therefore, this study has a survey using the decision items as an extension which also measures their importance in the decision making for logistics outsourcing in the automotive industry in Brazil. It is important to highlight though that the present research is limited to the automotive industry and should not be reapplied to other sectors before the representativeness of the proposed factors is assessed to other industries.

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