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Integration of small business operations for suppliers of the Brazilian automotive industry: An approach to multiple cases¹

Abstract

The objective of this research is to present the factors that strengthen the integration of micro and small business suppliers in the supply chain of the automotive sector (MSB) and to examine their importance in the activities of the production chain. This work was conducted by using both qualitative and quantitative approaches, applying multivariate statistical techniques and structured interviews in order to reduce bias and facilitate understanding of the methods of collection and analysis of data. The data analysis examines the indicators of the importance of the supply chain by the buyer and supplier as a differential under the aspects of motivation, commitment and confidence among its members. As a way of building a collaborative process between them, generating an alignment which could be considered to be strategic. The results confirm the relationship between micro and small companies when supplying the automotive industry in the supply chain, explaining the supply of parts and components and assisting in building a functional model of the integration of these existing suppliers to the car maker.

Keywords: supplier integration, collaborative relationship, supply chain, automaker

1. INTRODUCTION

According to Teixeira (2004), adaptation and interaction the supply chain are necessary to presented normally, as limited knowledge of a way of thinking that is capable of guaranteeing bonds between the order in the organization. The problems can be minimized mainly by the development of abilities in research and if the suppliers consolidate a partnership in the supply chain. One perceives, then, that adapting to change is a challenge for the market, which is promoted for the constant new features presented in the daily one of the enterprise environments that, in turn, functions as a kind of creative redoubt of conflicts.

Such conflicts, however, present two aspects to be considered: bad conflicts if induced by a clutter, and conflicts, if such clutter will be worked in such a way as to transform integrant ones into creative sources that are capable of generating new aspects of creativity in regard to competitiveness. The supply of components for intermediate companies supplying larger forms of transport will be satisfactory and the marketing of spare parts will be taken care of, generating a challenge in the search for competitive advantages and prominence in the market (Eberhardt et. al., 2004). Where the processes of the logistic chain establishes connections, the organizations obtain satisfactory differentials in consequence, as well as increases in the levels of quality of service and the product as it is offered to its customers, as along with a reduction in the costs of storage and supplies, by means of distribution channels. Continuously searching for the integration of suppliers and methodologies of purchase leads to a consideration of internal constraints, cultural factors and an understanding of the importance of suppliers (Pozo et. al. 2010).

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This research is intended to contribute to the construction of a theoretical model of the integration of the suppliers of the MSB that comprise the supply chain of the Brazilian automotive industry, referring to multiple cases and companies in the region of Jundiaí - SP. This study attempts to characterize the integration of the chain of suppliers of automotive parts in Brazilian assembly plants while MSB carries on its purchases of parts and components. This allows the purchasers to influence the integration of the suppliers, indicating where the transport points needs to be observed in terms of chances for improvement chance. In this context this model completes an existing gap in the supply chain that previous research had not approached. Figueiredo et al. (2003) present a new concept that the function of purchasing inside of a company must have strategic prominence and must aim at a competitive management.

The actions and the interactions are intrinsically linked in the daily actions of the companies. They must be part of the research, and the choice of the subject of this project was motivated by the intention to launch a search capable of identifying the factors that may make it difficult to facilitate the integration of the suppliers that act in enterprise environments, especially those who function in the internal environments of micro and small businesses.

Such excellent results are treated as raising certain problems which can be related to the question of how the integration of the supply chain of automotive parts to the assembly plants of Brazilian vehicles can be characterized. This would also take into account the form of the how small businesses conduct their purchases of parts and components, taking into consideration the influence that the leadership of the purchasers exert on the integration of the suppliers of this context. The projected measure will help to minimize the problems for intermediaries in the development of their research abilities and may help to consolidate partnerships within the supply chain. This will emphasize the contribution of the theoretical construction of a model for the integration of the suppliers in the Brazilian automotive industry between the micron and small business (MSB), comparing them with the model used for the supplying related companies and collating the techniques applied in the national automobile industry.

The participants from whom the database of this monograph was compiled are the same persons who were included in the chain of supply, as members of the MSB group in the region of Jundiaí – SP. They wished to be able to extend the concepts which were demonstrated by the major companies, until the final agreement of the integration of a group of suppliers could be made and a more complete chain of suppliers of automotive parts could be established. Figueiredo et al. (2003) argue that the function of a purchase inside of a company must have strategically prominence and aim at achieving competitive management. According to Bowersox et al. (1992) organizing a logistic chain of supply with constant exchanges of information is very important, with regard to plans for the production of transparent forms and needs using, in some cases, advanced concepts such as *Just in Teams (JIT)*, *Efficient Responses To Customers (ECR)* and *Warehouse Management System (WMS)*.

The most suitable method and the procedures of research were used to establish quantitative and qualitative examinations of the objectives of this work. This involved a considerable level of interaction between researchers and participants. According to Eisenhardt (1989), a multiple study should involve a strategy of intense research into the perception of the existing dynamic in the context of interviews, documents and. Voss, Tsikriktsis and Frolich (2002) affirm that

such methods are used to study the phenomenon in its context and when it is necessary to explore variable or partially understood phenomena to a certain degree of depth. In our research, a minimum of six cases was required to describe the phenomenon. According to Eisenhardt (1989), even if it is not possible to identify ideal cases, it is possible to gain information from four of the ten cases. The research was carried out with those responsible for purchases (mostly supervisors and controllers) of the region of Jundiaí/SP in 17 MSB of the branches, as well as other leaders of the process of change, such as coordinators of projects, logistics experts and technicians.

In order to identify more specific goals for the work, the specific objectives described as determined below are intended to lead to the fulfillment of the general objectives, that are: *If the form that the integration of suppliers in the gratings companies is the same as that used in the MSB suppliers for the Brazilian automotive industry, then the antecedents for the integration of the suppliers in the great companies of the automotive industry that are being used in the MSB will also involve the use of Supply Chain E. The importance of the leadership of the purchasers applies only to the great companies but can also be extended to the whole chain of the suppliers in the Brazilian MPE.*

The results had included the following inferences about the integration of MSB into the Brazilian automobile industry. The development of abilities in the scope of the suppliers was positive, and created an increase in confidence in supply chain, a more effective interchange of information and greater transparency.

2. REVIEW OF THE LITERATURE

As Pyke (1992) suggests, other qualities are targeted for the industrial development of small businesses, such as achieving more diversity of products and customer service and increasing the level of quality care in a personalized way, with a simple structure and dynamic responsiveness to the market. The approach taken by Porter (1998), to inter-business relationships and the ability to exploit them, should not be limited to the corporate world of business units. The author believes that *...the pursuit of interrelationships by some competitors is compelling others to do the same or risk losing their competitive position.*

Ballou (2006) suggests a logistic definition of Enterprise One as being the activities of the movement of materials and storage that facilitate the flow of products since the attainment of the substance until the point of final consumption can be adjusted to make it available to the customers to a reasonable cost. The author sees the transport system, the administration of traffic, the preservation of manuscripts, the storage of products and the gathering of information about logistic planning as necessary for providing the required products and services to the customers.

Lambert and Stock (2001) define logistics as a process that involves the planning, implementation and semi finished control of the flow of the efficient and economic storage of raw materials, finished materials and products, as well as the information relative to its origin and finally its consumption, making sure to take care of the requirements of the customers.

The importance of this concept is extended still more when Christopher (1997) includes the question of the value for the customer. Therefore, an integrated logistic system involves greater

trustworthiness in delivery, adding benefits to the offered product, so that customers are able to perceive such value. Research has demonstrated empirically that the perception of these benefits is high for intangible products, as in the case of services. (Bienstock, 2002).

McDuffie et al. (2001) affirm that the pursuit of logistic excellence has become a powerful source of competitive advantage. By the 1980s and 1990s, companies had begun to understand this not as a simple source of reduction of costs, but also as a source of improvement in the products and services offered to the customers, indicating a specific concern with *supply chain management* (SCM) in terms of cost.

Some definitions exist that can be considered for SCM. Therefore, as all the business are subject to constant alteration, the proposal of definitive concepts may be risky. However, in terms of its objectives, it can be said that “SCM is an administration philosophy that it searches to unify the abilities central offices, the resources and the functions of business gifts in such a way in the organization as its consumers are of it in order to add value in the offered services.” (Ross, 1998).

In a general way, for the production of the automotive vehicles that require efficient processes and innovative products and need reactive processes, it is always necessary to take customer demands into account with regard to security and to take care of the balance of production and *co-makership*. According to Merli apud Martins and Laugeni (2006), the sample for relationship of the supplier and the customer evolved as a result of the necessity for customers to reach their final objective efficiently. The choice of a supplier passes for a level of evaluation so that if this is carried out correctly, it will assist in terms of analysis and improvements in the productive process which guarantees quality. This can result in earnings for both parties, therefore having a great advantage in the purchase can generate a great impact on profit.

Bowersox and Closs (2006) argue that by combining the *postponement* of logistic and *postponement* of production, it is possible to reduce the anticipatory nature of the businesses. However, the cooperation and the sharing of information between the constituent members of the supply chain is still necessary. The two types of delay reduce the risks, but in different ways. With *postponement* of production one concentrates on the form of the product, moving the unfinished item to the front in the logistic system for modification before the delivery.

The quality of service supplied for the assembly plants of auto machine vehicles to the customers has been a variable of performance which, as Greenberg (2009), is currently pointed out as measurement of competitiveness of a company. The chain, of which it is a structural part, duly offers support not only for taking care of its demands for the products generated by the process, but leaving out all the elements that had originated in the interface with the other associates.

With regard to the clarity with which the functions in each process of the chain are defined, it becomes simpler to take operational decisions if they are directed to achieve synchronization and this is adjusted to include concluding internal operations. Most of the time, these adjustments consist of standardization of data formats for use in the systems of information or internal operational procedures that aim in a similar way the execution of tasks (Laudon, 2005). Fiala (2005) affirms that the structure of the Supply Chain is composed of suppliers,

manufacturers, deliverers, retailers and consumers. These units are connected to each other through bidirectional flows of materials, financiers and information. Marquez et al. (2001) also it detaches three flows of the Supply Chain: information, materials and financiers and these flows also are gifts in the nets of supply of automotive parts.

From the perspective presented by Cox et. al. (2004), the authors indicate that there is a correlation between the alignment of business relationships and the performance of suppliers. When a position of power is dominated by buyers, there is a tendency for the pro-active approach to be adopted and to consider how the development of new products and suppliers can facilitate integration initiatives and the SCM.

3. METHODOLOGY

The components used in this method in this research are: the boarding, the type of research according to its general objectives and the strategies used. Figure 1 synthesizes these components:

Figure 1 – Method of the research
Source: Gil (2007)

As Gay and Airasian (2003) affirm, the boarding of research adopted in this research corresponds to quantitative and the qualitative analysis which requires a considerable level of interaction between researcher and participant. Eisenhardt (1989)'s multiple case study consists of a strategy of research intent in the perception of the existing dynamic in the context of singular scenes, uniting methods, equal interviews, documents, questionnaires and considerations. Voss, Tsikriktsis and Frolich (2002) affirm that such a method can be used to study a phenomenon in its context and explain when it is necessary to explore variables or phenomena which are partially understood to be unknown, focusing on answers to specific questions of relative depth.

Moreover, studies of multiple cases is more robustness than a single case study, therefore the resultant tests of multiple cases are considered to be more convincing (Yin, 2001). To determine the sample size, the desired confidence level of 90% was taken into account and a margin of error of $\pm 10\%$ was allowed for. The formula adopted for determining the sample size was adequate for small populations, as Rea and Parker (2000) outline in the following (equation 1):

$$\text{Tax of answers} = \frac{Z^2 [p (1-p)] N}{Z^2 [p (1-p)] + (N-1) C^2} \quad (1)$$

Where:

C = maximum permissible error or accuracy in terms of proportions (10%)

Z = confidence level in units of standard deviation (1.645)

P = proportion of the universe (50%)

N = number of elements in the population (the total enterprises in the area surveyed are 17)

14 companies were surveyed. After the closer work of companies, the exact amount of 15 respondent companies was reached, thus reaching the minimum required for the confidence

level of 90% required for the results. Among the different types of validity, a validation of content or face was used in this research, with regard to the function of the inexistence of a standard with which the elaborated instrument could be compared. The elaborated questionnaire was sent to four specialists who, by using an Excel spread sheet, related the subject to the question and had verified whether the questions were in accordance with the proposals that had served to measure the data, in order to get the answers to the objectives considered in this research.

After gaining the approval of the specialists, the instrument used for collection of the data were submitted to the phase of validation to the 20 respondents, pupils of superior level of the areas of logistic after-graduation and quality who worked in the area of supply of automotive parts.

After analysis of the questionnaires sent by the respondents, two questions had been removed and the instrument of data collection was sent to the 15 companies in the region, in order to obtain the answers to the questions that had been considered.

3.1. Collection of data

Yin (2001) enumerates six types of data collection: documentation, registering of archives, direct interviews, comments, indirect comments and physical devices. In the case of the present research, the forms of collection of data used were a structuralized questionnaire and interviews.

For Shah and Corley (2006), interviews are important. They can provide a deeper relationship and more proximity with the people involved in the phenomenon under analysis. Such sources of collection of data must possess focused instruments of support in a survey of the existing theory regarding the object of study (Voss, Tsiriktsis; Frolich, 2002). A questionnaire with objective questions was used for collection of the data and was measured by the respondents on a scale of 1 the 5. The questionnaire was elaborated with made use questions of form as if to contradict or minimize the resultant focus of the personal interpretation of the respondent.

The questionnaire was structured in three sections: The first section aims to gather information about the respondent including information about their position or function in the company, the time of contribution in this position or function and the degree of scholarship involved.

The research was carried through with the responsible ones for purchases, quality or production of the region of Jundiaí - SP in 15 MSB of the branch of auto parts. The trustworthiness test was applied, by obtaining an Alpha coefficient Cronbach of 0.8012, for the set of the variable of the proposals. These values allow evidencing acceptable values for the trustworthiness of used constructs (Hair et al. 1995). The internal consistency is measured directly by the alpha coefficient of Cronbach. Typically, the questionnaire is considered trustworthy if the alpha will be superior by 0.75.

4. ANALYSIS AND RESULTS OF THE RESEARCH

The results of correlation of the questionnaire are presented in table 1, which follows. The variable of the proposals presents significant correlations itself. This fact estimates the existence of interaction between the questions, as affirmed in the literature revision. The

question of this research, therefore, was answered. That is, there is evidence that interactive relations will enter the strategies of the supply chain. For this research, parameters of approval of 0.75 were used.

Table 1 - Coefficients of Alpha of Cronbach for questions
Source: Data raised for the research

4.1. Respondents

The names of the companies have not been divulged by request of the respondents, therefore. The name of the companies does not appear in figure 2, where the automotive supply chain is described. This is partly responsible for the MSB that the questionnaire answered and the city that the company is located in.

Figure 2 - Identification of the Respondents.
Source: Data raised for the research

4.2. Tests and Statistical Results of the Research.

One of the boarded tests for analysis of the proposals was *Shi Square*, devised by Kruskal Wallis, and Mann Whitney, while free distribution tests or tests of free distribution constitute an alternative way of approaching this type of problem. The term “free distribution” is vulgarly used to indicate that the methods are applicable independently of the form of the distribution.

The statistics distribution represents a set of tools of more appropriate use in research if one does not know the distribution of the population and its parameters well. The *Shi Square* test was applied in the analysis of all the proposals in set in order to verify all the situations, if it involved a significant difference between the groups, that is, $p > 0,05$ in all cases. This test was applied to compare of more than two independent groups not necessarily of the same so great.

The Mann-Whitney test was used in the analysis the P2 proposal for the purposes of comparison of two independent groups. In this research the group was asked questions from the questionnaire as part of the collection of data, and the proposal was composed of variables of ordinal measurement.

The Kruskal-Wallis test was used in proposals P1, P3 and P4, being applied in three comparison or more independent groups while the variable must be of ordinal measurement. As Callegari (2003), in the parametric tests, reveals, the values of the studied variable must have normal distribution or a normal approach. The free test distribution does not have requirements as to the knowledge of the distribution of the variables in the population. Value 3 of the questionnaire as used in this research was supplied in the analysis, therefore referred to a null value. This gave the respondents an option between: no opinion/ not applied. On this form the vises that could appear during the analysis of the data had been diminished. The hypotheses tested in this research had received the name from the proposal and had been referenced by the letter “P”.

With the above argument in mind, it is clear that the integration of the supplier's micron and small entrepreneurs of the automotive sector demands certain set of abilities. These are described in the proposals below:

Proposal 1: The formation of the collaborative abilities has a positive impact in the integration of the suppliers.

The P1 proposal was composed of four groups divided in 18 questions, with the purpose of clarifying if within the analyzed groups some group would exist that would be more significant. After an analysis of the data for software SPSS 17, it was seen that in all the situations, table 2 statistical did not infer a significant difference between the groups in terms of agreement; that is, $p > 0.05$, was considered in that all the analyzed groups of questions must be observed by the MSB as being essential in the formation of the collaborative abilities.

Table 2 - P1 result.
Source: Result of the research

The groups of questions considered in this research that form the bases of the collaborative abilities are:

- P1_1** - Strategic Alignment
- P1_2** - Quality and orientation to the customer
- P1_3** - Development of product
- P1_4** - Trustworthiness in supplying the buying relation

The data had been gathered from the analysis of the proposal using the Kruskal-Wallis SPSS 17. The MSB may have been pledged in the creation of collaborative abilities as a basis for its development and the creation of differentials. This is also a challenge to be looser, therefore with the advent of the monitoring of the customers, using the software involved having a bigger participation of information between the components of the supply chain, generating a bigger collection on the part of the customers of investments in development, in such a way technological how much of suppliers.

The strategic alignment, also, showed that those suppliers that were involved in successful projects with its customers had been highly motivated. This motivation was manifested in various ways. The highly motivated suppliers had finished by being available to follow: is necessary changes and adaptations in the strategy, processes and organization, in order to provide its customers with one strong work relationship.

These suppliers, in particular the controllers, seem to have determined that the relationship with the customer was beneficial for the companies and, therefore, the operations of the companies had lined up in compliance with this. With regard to the data in this research, it seems to be difficult to construct and to nourish the same type of thoughts for all the organizations to be strong. This will not have been supported as a market differential guaranteeing the survival of the company.

The quality in the MSB is noticed with importance, but with reference to the quality they are being recently implanted for the customers in order to guarantee stated periods. So that this information is delivered quickly in the correct form, many customers offer software for the

follow up online of the production of the MSB, and initiate a practical procedure for one of the assembly plants for its suppliers at the first level.

The development of the product was carried through generally on account of the final customers, so I restricted the MSB to the accomplishment of the individual products (parts) to be used in mounted final sets by the great suppliers of the automotive assembly plants. The trustworthiness of the purchaser-supplier relationship was characterized by one raised degree of integration of the suppliers. The data shows that it has one high reliable level on the part of the supplier due to improvements in the quality of information with the advent of the sharing of software and the communication.

The purchases for the most of the cases are conducted by email, which can be evidenced in case of the auditing of the quality system. A degree of delay in the supply may exist, but to prevent this, the delay extends to the whole chain. This was taken advantage of in this research by the companies, who presented their concerns about the interaction with and loyalty of the suppliers, not forgetting the intention to develop supply alternatives.

Proposal 2: The promptness of contribution of the suppliers extends the level of the collaborative ability of the suppliers.

The P2 proposal was formed from two particular questions. After the data for software SPSS 17 was analyzed, it was noticed that the table 3 statistical did not incur significant differences between the groups, considering that in all the groups the MSB was essential in the formation of contribution promptness.

Table 3 - P2 result.
Source: Result of the research

The group considered in this research forms the basis for answering contribution promptness:
P2_1 - Processes of improvement and reactivity.

The data analyzed in this proposal are presented to show the results of the analysis of the proposal with software SPSS 17, using the Mann-Whitney test. The MSB presents ease of acceptance of the processes of improvement so as to process how many products are suggested for their customers, who have presented a high index and favorable front for the new challenges of supply suggested by the customers, presenting one high index of flexibility in attendance for new productive requests.

Another aspect that emerged was the action of the leadership in purchasers of the MSB by the suppliers. The majority of the recent research on leaderships has concentrated in capacity to influence a group of people to reach a common objective, inside of the proper organization, Northouse (1997), to force the power and the formal authority.

They seemed in general to have a positive attitude to the work. A climate of participation and commitment is developed through the leadership of the purchasers, involving the negotiations carried through by the acquisition of the parts and services used in its products. The purchases are generally regional, and thus are carried through by the next suppliers of its installations or if possible in the city where it is installed.

Proposal 3: The effectiveness of the leadership of the purchaser in the development of suppliers has a positive impact on the integration of the suppliers.

The P3 proposal, composed for two groups with 7 questions and analyzed by software SPSS 17, noticed that in all the situations, statistical table 4 did not incur significant difference between the groups in agreement, that is, $p > 0.05$ considered that all the analyzed groups must be observed by the MSB as being essential in the formation of the interaction of the suppliers.

Table 4 - P3 result.
Source: Results of the research

The groups of questions considered in this research that form the bases of the effectiveness in the leadership are:

- P3_1** - Leadership of the purchaser
- P3_2** - Development of suppliers

The analyses of the data of this proposal are resulted gotten for the analysis of the proposal with software SPSS 17 using the Kruskal-Wallis test. Another construct that appeared previously during the codification of the data of the research carried through with the companies of first level finished identifying the continuous development supplying it. Conceptually, this constructor involves the activities of the organization in the formation which is excellent for the supplier at the most diverse levels, namely: *Failure Mode and Effect Analysis* (FMEA), *Just In Teams* (JIT), *Quality Total Management* (TQM), etc., activities to control and to evaluate the installations of the supplier.

The fact that the MSB that had presented effectiveness in the leadership of the purchaser in order to consolidate the common development of suppliers as being practical in order to create a commitment of the chain of supply and the reduction of the stated delivery periods is evident in the automobile industry. The activities of the development of suppliers must have been placed in a continuous base. The MSB worries about the development of suppliers so that the supply net which is part of it does not stop, and the concern for developing supply alternatives was indicated by the searched companies as being of utmost importance.

The searched MSB had not indicated a planning of control of risk of delays in the supply before the suppliers or commercial pressure as being practically carried through. The searched companies bet more in the partnership between the companies who comprised its net supply. This attitude generates delays in the biggest part of them. The excellent aspect of the research was shown to be the behavior of leadership and the easiness of the MSB in the adequacy of the new requests of process or product, important factors for the increase of the level of collaborative abilities.

Proposal 4: The internal restrictions and the cultural factors are retarding elements in the process of internal development.

The P4 proposal was composed for two groups and was divided into nine questions, with the purpose of clarifying whether, between the analyzed groups, some group could exist that would be more significant. After analysis of the data for software SPSS 17, it could be

observed that in all the situations, table 5 statistical did not create significant difference between the groups in agreement, that is, $p > 0.05$, considering that all the analyzed groups of questions must be seen by the MSB as being essential in the process of internal development.

Table 5 - P4 result.
Source: Result of the research

The groups of questions considered in this research that form the bases of the internal development are:

P4_1 - Internal Restrictions

P4_2 - Cultural Factors

The analyses and results had been gathered from the analysis of the proposal with software SPSS 17, using the Kruskal-Wallis test. The normalization of data also disclosed that the relative challenges to the integration of the suppliers in the automotive sector were not related to the national suppliers, as one could expect.

In many of the companies, it seemed that some of the biggest points of restrictions had been based to the internal questions of the companies. One of the challenges which more pressing than was identified was related to the actions proceeding from the customers not generating realistic expectations of supply. The restriction of the MSB in the development of products, the bureaucracy at the moment of the supply the companies of first level and the monitoring constants carried through by the customers had been considered as causing elements of delay and stresses between the parts.

The explanation for this fact is simply that the gap in ability between the purchaser and the supplier grows with increased complexity, due to the rigorous requirements of the product. On the other hand, the innovative attitudes of the suppliers and the mentality of the increase of the competitiveness before the market, of which the MSB is part, were seen as being very important by the companies being searched. The necessity of the proximity of the companies who they supply to the assembly plants is imminent. In this research, this concerns whether if works between the searched ones, creating a trend in participating of industrial accumulations regarding cost reduction.

4.3. Some quarrels

As the current market is becoming more competitive in worldwide terms, the automotive branch is considered to be of interest by academics, as well as by professionals in diverse areas of performance, as much in the automotive sector as in other sectors. The elements identified by means of the analysis of the data and its indirectly bonded and had supplied a solid base research to add value to the development of theories in this specific area (Westbrook & Frohlich, 2001; Malhotra et al., 2008).

The results of this research specifically contribute to the addition of a specific perspective on the integration of the chain of suppliers, analyzing the antecedents of this integration in the automotive sector. Moreover, the MSBs that participate in this context do not seem to limit it to the formal leadership, while the analysis of the data in fact suggests that the leadership, the good relationship and the contribution seem to exist in all the searched companies and all the

involved functions in the activities of contribution on the part of the components of the supply net of the Brazilian automotive industry.

Thus, even though the formal responsibilities involved in the supply process generate priority leadership in the chain, the people involved and the methods used in the negotiations create an organizational leadership. The implications of the negotiations of integration next to the customers are serving seem to be that they gradually pass on the production of parts and components of the base for elements of bigger value which are added to the products of the customers, with reference to the strategies of production, including the modules and systems, in order to become successful.

The customers, in turn, demand processes of improvement in the abilities and the innovative capacities. (Hult, Ketchen and Chabowski, 2007). Supplying the successful buying integration is, therefore, a key element in the Brazilian system for creating automotive products with high performance in the global market.

The performance of the MSB that compose this net, as much the great companies, considered of first level, how much the Micron and small business must be guided by pointers, as cost, quality, production, delivery and flexibility. In such a way, more attention must be given to the procedures regarding the potential of development of the innovation, integration with the high cupola of the intermediate managers, development of processes, quality, mentality of management of the supply chain, collaborative performance, ability in organizational learning, as well as raising the reliable level between purchasers and suppliers in order to integrate them inside the automotive chain of supply to achieve the level of performance demanded for the world-wide market.

As consequence, the concept of availability, helpfulness, contribution and the continuous process of development on the part of the supplier factor of great relevance for the supply MSB of the chain of the Brazilian assembly plants. Collectively, the four proposals, after analysis by software SPSS 17, constitute a picture wherein we can identify the ranks of the main antecedents in regard to the integration of supplier MSB in the automobile industry. A general vision of the development of this demonstrated conceptual aspect is shown in tables 6 and 7.

Table 6 - Note of the Data of Research
Source: Result of the research

Table 7 - Classification of the Proposals
Source: Result of the research

In table 9 the results of the analyses of the data used in the attainment of the answers to the objectives of this research are declared. The assertive respondents to whom the options had been pointed out said that the respondents had to choose as alternative that indicates the reality of its company with regard to each question, while the columns of the proposals indicate the amount of assertion for proposals and the finished column points to the sun of all the assertive respondents.

For the verification of the proposals, an analytical model was created to show the attributes and variables of the integration of the searched chain (Figure 3) as the MSB must be located before the customer and in order to take care of the demand of the supply to the national chain of auto

parts, which primacies must attempt against in the development of the necessary collaborative abilities for the creation of partnerships in the supply to this chain, with regard to the continuous development of the collaborative promptness and the leadership of the purchasers, but also to manage the problems of the acceptance of products for the customers.

5. CONCLUSION

The results petitioned in this research made possible the construction of an analytical model based in attributes and variables, for the characterization of the dynamics of the SCM. The results were later analyzed, in order to answer the question of study of this research. What are the basic changeable attributes and the characterization of the integration of suppliers in the MSB?

An analytical model was generated after analysis of the data had provided a positive signal (+) the variable that had been considered favorable to the process of integration of the MSB in supplying the Brazilian automotive industry. This was important in that this chain of supply, if structuralized better each time and if giving the negative signals (-), indicating that v the variable must be managed so that it does not interfere with the contribution and that a good relationship exists with the relevant members of the supply chain. These indications are demonstrated in figure 2.

Figure 3 - Analytical model
Source: Results of the research

The attributes raised through the analysis of the results of this research must be considered so that it has the integration of the supplying MSB to the Brazilian automotive industry, taking care of the requested requirements which are appreciated as indicating the supplying of the chain. They are:

1. The development of abilities that how the suppliers transform the MSB favorably, with regard to intermediaries for reliable increases, generating partnerships in the chains of values to be negotiated. This event confirms the results and answers the P1 proposals. The formation of the collaborative abilities has a positive impact on the integration of the suppliers and P2: The promptness of contribution of the suppliers extends the level of collaborative ability of the suppliers, where the strategically alignment in the development of abilities that generates trustworthiness between supplying purchaser/ is being evidenced;
2. Factors such as the reactivity and the ease of accomplishment of improvement processes had presented basic distinguishing strategies favorable to the MSB, under the aspect of the competitiveness inside of the supply chain, which are evidenced in the P3: The effectiveness in the leadership of the purchaser in the development of suppliers has a positive impact in the integration of the suppliers;
3. The interchange of the information, when effected on the basis of principles of transparency and accessibility, a logistic chain is capable to organize all adequately, however in this research it was guided that the MSB present great difficulty to transpose the barriers generated for the company-customers, fact presented in the P4:

4. The internal restrictions and the cultural factors are retarding elements in the process of internal development, generating delays and stresses unnecessary to MSB.

Integration was looked into in this research with regard to the antecedents and also to demonstrate the process of development of the product (PD), as demonstrated in the P1. The formation of the collaborative abilities has a positive impact on the integration of the suppliers, with regard to restricting the MSB. This must be detached with the intention of increasing the contribution between the purchaser and the supplier, so that the enterprise can anticipate the yearnings of the clientele, as well as the constantly prescribed modifications in what it refers to as the complementary laws, norms and transformations in the universe of the regimental and operational activities of the MSB.

The fact was evidenced that the MSB that had presented effectiveness in the leadership of the purchaser to consolidate the common development of suppliers was practical with regard to the loyalty of supply and the reduction of the stated delivery periods. This provided evidence for the integration of the Brazilian chain of automobile supply. The activities of development of suppliers must have a place in a continuous management base.

One conclusion, despite permanent collaborative consideration, must be made in regard to the constitution of the alliance between the MSB and companies of the first level of supply, operating in diverse and supplying sectors of the net of supply for the assembly plants of vehicles and the marketing of spare parts, through the innovative and generating characteristics of the good relationship of the chain.

With regard to the elaboration of the subject, the integration of the micron in small businesses in supplying the Brazilian automotive industry, it was concluded that, despite this research approaching operational tools for the micron and small businesses which longs to enter into the auto supply of parts, in order to help in the taking of decisions. The companies in the branch of logistics work with the distribution of this production so that they understand the flow of the production, as well trying to solve the problems that such suppliers face daily in enterprise one. E, finally, for the researchers, is a form of aid in regard to the material supply, intuiting to give in to continuity in the understanding of the integration between suppliers and management in the net of supply of automotive parts.

The limitations of this research were in the capacity of the MSB to develop new technologies and for these to be accepted by the customers in order to extend the research related to the communication in the chain of supply of the Brazilian automotive industry being diminished at the time which had only been affected in the city of Jundiaí/SP. This must have deepened the basic development of the application of attributes and variable for the characterization of the integration of MSB suppliers of the Brazilian automotive industry, as well as MSB in other regions.

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TABLE ANNEX

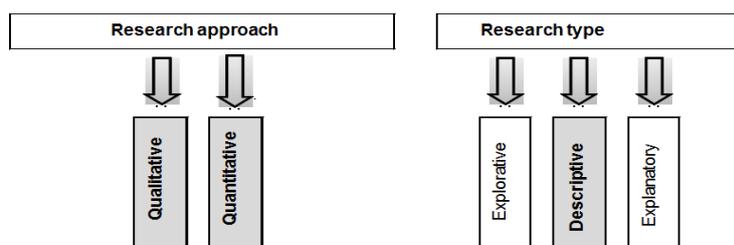


Figure 1 – Method of the research
Source: Source: Gil (2007)

0 VARIABLE		
QUESTIONS		α
Q1	1. The involved ones in the production of the company share of the same in such a way productive information/how much in the supply, preventing shunting lines in the information flow causing deficiency in the productive flow.	0,7983
Q2	2. The communication is efficient in the supply chain which you is part, since the supplier until the final customer.	0,7878
Q3	3. The purchases are carried through after competition between suppliers having considered aspects technician and of cost.	0,7952
Q4	4. Before the acquisition of parts negotiations between the parts are carried through, having aimed at to verify the adequacy technique of the product/service.	0,7812
Q5	5. The plan of control of risks takes care of to the necessity in the acquisition of material and supply of services.	0,7953
Q6	6. The company supplies mounted sets (parts mounted between them with a purpose specify to become a product) to its final customer.	0,7871
Q7	7. The applied processes of improvement to the products are taking care of the requests of the customers.	0,7882
Q8	8. The concern of the suppliers in together with participating of processes of improvements in the product its company exists.	0,8018
Q9	9. Constantly company she positively reacts fronts to the challenges of the length the requirements of the customer.	0,7964
Q10	10. The responsibility of the development of new products is exclusively of the customer.	0,7861
Q11	11. Before the beginning of the production, the customer shares information techniques on the products to be produced.	0,8036
Q12	12. Customers share software of control of the production/ supply with its company.	0,8011
Q13	13. The production requests come followed of information as drawings or norms supplied for the customer.	0,7999
Q14	14. The primacy between the companies who compose my net of suppliers is the confidence.	0,7957
Q15	15. I have concern in the development of suppliers for attendance of my customer.	0,7992
Q16	16. Concern with the integration of the suppliers of the supply net exists which I participate.	0,7974
Q17	17. A program of management of productive processes efficient in the company exists.	0,7843
Q18	18. The pointers for the quality give a general vision to me of the production	0,7932
Q19	19. The customers carry through follow up in my production periodically.	0,7957
Q20	20. The cost of the production is monitored and constantly reduction works are become fulfilled.	0,7959
Q21	21. The internal interferences of the procedures of purchases are barriers for the negotiation of products used in the production.	0,7957
Q22	22. The planning of my purchases is important for the company.	0,7829
Q23	23. Concern in keeping the product quality and parts supplied my customers exists.	0,7917
Q24	24. The company if worries about the quality of the suppliers of parts and services of systematic form.	0,7878
Q25	25. Meetings of strategically alignment with the suppliers are carried through.	0,8184
Q26	26. I highly consider the competitive company before the pursuing of the market that I participate.	0,7897
Q27	27. The concern in investing in development exists to take care of the businesses.	0,7974
Q28	28. Innovative attitudes are considered during the cadaster process of suppliers.	0,8093
Q29	29. The purchases are carried through by email.	0,8016
Q30	30. The production of the company is monitored by my customer.	0,7858
Q31	31. The dependence has the concern in developing alternatives for the suppliers of parts preventing.	0,7969
Q32	32. The concern in participating of industrial accumulations exists in order to reduce the logistic costs.	0,7914
Q33	33. The leadership accomplishes of the purchaser is applied in all the negotiations	0,8024

Q34	34. The decisions on the company are taken aiming at increase of the competitiveness.	0,8131
Q35	35. It has the concern with high and the decreases of the supply of some components to the customers.	0,8219
Q36	36. Problems with stated period exist generated by the inefficiency of suppliers.	0,7975

Table 1 - Coefficients of Alpha of Cronbach for questions

Source: Data raised for the research

Identification of the respondent MSB			
Respondents	Supply	Responsible	City
R01	Locks, jambs, rear mirrors and doors handle	Purchases	Valinhos - SP
R02	Reservoirs and covers	Quality	Jundiaí - SP
R03	Constraints of doors	Purchaser	Valinhos - SP
R04	Motor parts replacement	Purchaser	Jundiaí - SP
R05	Belt of security, parts of finishing of the panel.	Quality	Jundiaí - SP
R06	Automotive packings	Logistic/quality	Cabreúva - SP
R07	Superficial treatment using the following processes: KTL, Zinc, Nickel, Hard anodizing, Organometallic, Has covered Alkaline, Chromium, Tins, Phosphating, Oxidation.	Purchaser	Varzea Paulista - SP
R08	Springs tractive, Springs of compression and Springs twist, Metallic Devices (connecting rods, lifter, etc), Printed in general (until 150T).	Purchaser	Campo Limpo Paulista - SP
R09	Thermal services of Metal Treatment	Purchaser	Jundiaí - SP
R10	It would print; Weld and Assembly of sub components	Purchaser	Jundiaí - SP
R11	It would print	Quality	Jundiaí - SP
R12	Painting in plastic (panel, for shocks)	Quality	Jundiaí - SP
R13	Automotive (Plastic Reservoirs)	Purchaser	Jundiaí - SP
R14	Automotive (Layers cushions, blown diaphragms, kitchen-range overhead exhaust, concertinas and Prohibitions for System of injections)	Quality	Jundiaí - SP
R15	Hinges, components for banks Locks and limitors of Doors, components for belts of Security, sets and components for brake system.	Quality	Jundiaí - SP

Figure 2 - Identification of the Respondents

Source: Data raised for the research

Test Statistics^b

	P1
Chi-Square	1,872
Df	3
Asymp. Sig.	,599

Kruskal Wallis Test

b. Variable Grouping: Grupo_P1

Table 2 - P1 result.

Source: Result of the research

Test Statistics^b

	P2
Mann-Whitney U	52,500
Wilcoxon W	130,500
Z	-,953
Asymp. Sig. (2-tailed)	,341
Exact Sig. [2*(1-tailed Sig.)]	,413 ^a

a. Not corrected for ties.

b. Grouping Variable: Grupo_P2

Table 3 - P2 result.

Source: Result of the research

Test Statistics^b

	P3
Chi-Square	,815
Df	1
Asymp. Sig.	,367

Kruskal Wallis Test

b. Variable Grouping: Grupo_P3

Table 4 – P3 result.

Source: Result of the research

Test Statistics^b

	P4
Chi-Square	3,196
Df	1
Asymp. Sig.	,074

Kruskal Wallis Test

B variable Grouping: Grupo_P4

Table 5 – P4 result.

Source: Result of the research

Assertive	Proposals				Total
	1	2	3	4	
1	10	4	4	2	20
2	32	0	18	13	63
4	123	14	57	25	219
5	60	5	41	26	132
Total	225	23	120	66	434

Table 6 - Note of the Data of Research

Source: Result of the research

Proposals		N	Mean Rank
Generality	1	225	211,64
	2	23	199,41
	3	120	225,73
	4	66	228,83
Total		434	

Table 7 - Classification of the Proposals
Source: Result of the research

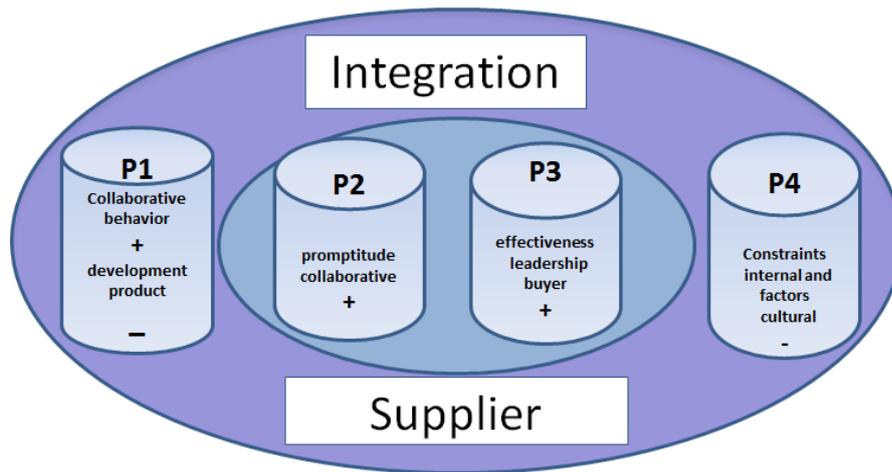


Figure 3 - Analytical model
Source: Result of the research