Determinants of Supply Chain Management, according to its managers

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KEYWORDS

Supply Chain,
São Marcos Industrial Hub,
Supply Chain Management,
Determinants of SCM.

Received 14.09.2018

Reviewed 12.02.2019

Accepted 13.03.2019

ISSN 1980-4431

Double blind review

ABSTRACT

The objective is to identify the determinants of the effectiveness of the supply chain (SC) operation and its management (SCM), from the viewpoint of its members or chain leaders. We conducted a descriptive research with the use of a questionnaire applied in the companies located in the city of São Marcos/RS (state of Rio Grande do Sul). The sample comprised a total of 42 respondent companies from a population of 67 industrial companies, resulting in 63% rate of return. We conducted a qualitative step with the supply manager of the only large company in the sample, and we concluded that there is a conservative culture in the industrial hub of the city of São Marcos/RS, and lack of confidence is their biggest barrier. When it comes to SCM, this is the main determinant and it must be worked on from the start so as not to hamper the development of the relationship with the partners as well as the implementation and success of the SC strategy. The research is restricted to the industrial supply chains of the city of São Marcos/RS for presenting a more organized SC structure. The originality of this study lies in the leading role of the manager, member or leader of the supply chain in sharing their perceptions on defining, beneficial and opposing aspects of the supply chain management and its operation. Originality also resides in the consonance between the literature and the research findings. The managers who were interviewed revealed that having more knowledge about the theme is a prerequisite to assess the effectiveness of the actions and performance of the supply chain.

PALAVRAS-CHAVE

Cadeia de suprimentos,
Pólo industrial de São
Marcos,
Gerenciamento da cadeia de
suprimentos,
Determinantes do GCS.

RESUMO

O objetivo é identificar os determinantes para o sucesso da operação de cadeia de suprimentos (CS) e seu gerenciamento (GCS), pela visão de seus membros ou líderes de cadeia. Foi conduzida uma pesquisa descritiva com a utilização de um questionário, aplicado nas empresas da cidade de São Marcos/RS. A amostra totalizou 42 empresas respondentes de uma população de 67 empresas industriais, resultando numa taxa de retorno de 63%. Uma etapa qualitativa foi conduzida com o gerente de suprimentos da única empresa de grande porte da amostra. Foi possível concluir que: o pólo industrial da cidade de São Marcos/RS possui uma cultura conservadora, onde a maior barreira é a falta de confiança. Ao se tratar de GCS, esse é o determinante principal que deve ser trabalhado inicialmente para não prejudicar o desenvolvimento do relacionamento com os parceiros, e consequentemente, a implantação e o sucesso da estratégia de CS. A pesquisa está restrita às cadeias de suprimentos industriais da cidade de São Marcos-RS por apresentarem uma estrutura de CS mais organizada. A originalidade do trabalho está no protagonismo do gestor da empresa, membro ou líder de cadeia, ao expor a sua percepção sobre aspectos definidores, benéficos e opostos do gerenciamento da cadeia de suprimentos e do seu funcionamento. A originalidade também reside na consonância, entre a literatura e os resultados da pesquisa, tendo revelado pelos próprios gestores, que ter mais conhecimento sobre o tema é um pré-requisito para avaliar corretamente o êxito das ações e o desempenho da CS.

1 Introduction

Supply chain is a theme that has been addressed within institutions because of its importance in business management. Its purpose is to integrate the internal areas of the corporation, seeking for suppliers, manufacturers and distributors which are committed partners to optimize their revenues.

To point out the importance of the supply chain, Wanke (2011) contemplates that inventory management influence on logistics and supply chain management has been increasingly more noticeable in academia, as well as in the corporate world. According to the author, the management of inventories in the supply chain, which is composed of several steps, may not be a trivial method, having the potential to effect significantly on the services provided to the consumer as well as in the costs of the company.

Barros (2007) states that no organization is independent, and that their operating capacity demands products and services from third parties, regardless of their scope area. Thus, the author states that new practices are being created and used by companies with the purpose of addressing their challenges. Today, in an extremely competitive market, cost effectiveness and efficiency growth are essential to organization's good results. .

Due to the changes that are emerging in the global context, Gomes (2014) emphasizes that the creation of tactics and collaborative measures may be the best way to achieve excellent service conditions. It impacts the sales of the organization through low costs, inventory conservation and displacement of products throughout the productive chain.

According to Klose & Ikemori (2013), in a publication from *Jornal do Brasil*, the supply chain is seen as a unique feature as it interferes rigorously in the company's profit, being also considered as remarkable for the company's productivity and image. According to the same newspaper in some scenarios the costs of logistics together with the costs of purchasing materials account for 75% of a company's total expenses. On the other hand, improving the supply chain can result in numerous advantages such as a decrease in logistics costs by up to 25%; reduction of total expenses between 3% and 8%; improvement in product delivery times of

15% to 30% and 30% to 40% return on invested capital. Therefore, we can verify that the adhesion to the supply chain and its management has a positive result on organizations.

This research is justified by the alternative that the supply chain (SC) provides, in an increasingly competitive market that is fuelled by an economic crisis, cost reduction and efficiency improvement without neglecting quality (Soares et al., 2017) and agility in delivering the product to the final consumer (Morita & Flynn, 1997). The Objective Theory (Kruglanski, 1996) and the Control Theory or Self-Regulation Theory (Carver & Scheier, 1982) present fundamentals that reposition the main decision maker in the role of performance analyst and feedback to act on the objectives and tasks of the organization in the future. The RBV (Resource Based View) and Transaction Cost Economics (TCE) Theories, coupled with lean manufacturing, just-in-time and Total Quality Management (TQM) approaches best explain the emergence of the supply chain, since it was originated from the need of cost reduction, especially in industrial companies (Cousins et al., 2006). The main objective of the article is to verify which aspects are considered relevant to the management and operation of the supply chain, according to managers of industrial companies, members and chain leaders.

The originality of this research lies in the vision and beliefs of the managers belonging to a manufacturing hub in a region of Italian settlement, which is permeated by a conservative culture and the individualism of its managers (Herédia, 2017), which is initially opposed to the collective actions required by the supply chain paradigm. The central aspect of the study is to verify what are the most important factors for the success and development of the supply chain and its management, according to the manager interviewed and what they would be willing to develop and share for a greater integration. The uniqueness of this study is also based on the presence of dissonant results that empirical studies have been presenting in relation to the postulate by theories that pave the supply chain approach and its management. Since its emergence in different areas of knowledge, these studies have pointed out that the understanding of integrating, conductive, constitutive and the supply chain performance aspects is still limited and has not received adequate attention in the construction

of a theory (Ho et al., 2002). Among the empirical studies are those of van der Vaart & Van Donk (2008), Naslund & Williamson (2010), Chen & Paulraj (2004).

Based on this scenario, this study addresses the supply chain theme and seeks to answer the following research problem: Which processes and aspects are important for the development and success of supply chain management according to the managers' viewpoint?

This question was answered by conducting a survey in the industrial hub of the city of São Marcos/RS. According to the managers interviewed, the aspects they would be willing to develop in a SCM context are the integration of internal management processes of materials and customer order management alone, sharing information exclusively about customer orders and production scheduling. Another finding is that the managers consider the SCM as a carrier of benefits for suppliers and customers in different attributes, as well as cost reductions, mainly of inventory, providing greater price competitiveness.

2 Supply Chain Management – a theoretical approach

Viana (2000) points out that, as organizations seek to synchronize their tasks, when they understand the management of their material assets and that they seek to repair themselves in order to achieve the elimination of losses, increasing the quality and competence of the services offered to its customers, it is when these companies will be able to coexist with the current parameters of materials management in the modern world.

Given this scenario, this chapter presents the bibliographic review of the topic under study on the processes of internal operations or activities involving the supply chain. It also seeks to inform about its risks and benefits.

Machline (2011) emphasizes in his approach that the administration of the supply chain in Brazil was similar to the United States, only with a few years of difference based on the American progress, where from 1990 onwards predominated the vision of supply chain, establishing the perception of business logistics by all links of the chain, from suppliers to final customers, in the form of an integrated vision, which over the years

has been expanded and modified, since the 21st century is seen as a global vision.

In this way, Scavarda & Hamacher (2001) describe that in the 1990s a new way of thinking about production strategies emerged, and from this moment on the relationship between companies and people began to be reviewed, causing a transformation in the supply chain and starting to operate in an integrated manner.

According to literature review, Table 1 presents the main definitions of the concept of supply chain management.

Table 1. SCM Concepts

Authors/Year	Supply Chain Management Concepts
Slack, Chambers & Johnston (2002, p. 415)	Supply chain management is the management of the interconnection between the companies that relate through connections, which produce value in the form of products and services to the final consumer in an efficient way.
Gonçalves (2004, p. 217)	Supply chain management is seen as a set of activities to efficiently integrate suppliers, manufacturers, distribution centres and storage, so that the products are marketed in the right quantity, in the right place and in a timely manner, focusing on cost reduction and high-level customer satisfaction.
Martins & Laugeni (2005, p. 170)	Supply chain management refers to the management practices that are necessary for all companies to add value to the customer, from the manufacturing of the materials to the production of goods and services until distribution and delivery to the customer.
Simchi-Levi, Kaminsky & Simchi-Levi (2010, p. 33)	Supply chain management is a set of approaches that efficiently integrates suppliers, manufacturers, warehouses and points of sale, so that the goods are produced and distributed in the correct quantities to the point of delivery and at the right time with the objective of minimizing the total costs of the system while meeting the requirements in terms of service level.
Chopra & Meindl (2011, p. 3)	The supply chain consists of all parties involved, directly or indirectly, in the fulfilment of a customer's request, including not only manufacturers and suppliers, but also transport companies, warehouses,

	retailers and even customers. It is dynamic and involves the constant flow of information, products and funds between different stages.
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In this way, the company that has a structured supply chain in its processes, besides having a systemic vision of the internal and external factors influencing it, can be ahead of its competition, promoting the achievement of its objectives and final customer satisfaction.

2.1 Contributions and risks of configuration in SC

Afonso, Afonso & Santos (2013), highlights some advantages in the integration of the supply chain, emphasizing the following gains: increased profitability for the parties involved in the process, greater credibility in procedures, improved response agility, lower costs with logistics and finally, a harmonious work environment. On the other hand, it is verified that besides the advantages there are some difficulties to be faced during the process of supply chain integration. The main factor is the clash between internal and external organizational culture, thus arising the difficulty in dissolving the old work paradigms.

Chaves & Callado (2014) show that the competitive advantages of an organization that has a supply chain is inventory reduction, which results in the attenuation of total production expenditures, reducing the prices of final products. Another positive aspect to be mentioned is the qualification of services provided to consumers that tend to improve due to the correct flow of information between the companies of the chain.

The current internal and external organization environment is busy and has many uncertainties and risks. Organization's managers are constantly busy with organizational processes. In light with this situation, imposing assertive quick decisions, require the use of methods for decision making which are effective in order to speed up and provide quality to the decision-making process involving the supply chain (Silva et al., 2008).

Thus, Aguiar, Tortato & Gonçalves (2014) reveal that in all supply chains, risks arise through the feelings of uncertainty because of the

implementation process, and that it is responsible for the changes within the organization, dispersion of customers and suppliers and the flow of information and materials that can lead to the lack of efficiency in the processes when administered in an irregular way.

When analysing the risks of supply chain implementation, Fernandes, Wrubel & Dallabona (2015) describe the main factors that cause a great impact on the organization such as: market instability, good customer relations and delivery deadlines, ineffective software used for control and mainly ill-prepared employees.

Therefore, we can confirm the supply chain importance for organizations when used properly, because according to Patto & Afonso (2009), there are still factors and obstacles to be clarified within the organizational environment that hinder the integration and interaction of the components of the chain such as cultural factors, lack of communication, lack of trust and technological factors. In this way, Pires (2004) points out that the problems faced in the supply chain go through the operational levels, being strategic, tactical and operational.

The critical success factors cited by Melo and Alcântara (2016) in their research address collaborative management in the supply chain, where there is information exchange, elaboration and realization of joint actions, as well as the sharing of knowledge and resources among the elements of the chain. Other factors addressed by the same authors include the use of information technology, the involvement of top management and the division of strategic clients and suppliers. In their opinion, when these elements are correctly employed, they contribute to the improvement of the supply chain performance in organizations .

Visentini and Borenstein (2014) observed that there are variables to be considered when implementing the supply chain. Internal factors such as the quantity of a produced item and the location of its facilities, as well as external factors such as the purchase of raw materials and the selection of suppliers. Therefore, it is necessary to have pre-established objectives or constraints to classify the elements as: minimum quantity of suppliers, budget controls and geographical location preferences in order to design a realistic supply chain project.

The research of Funo, Muniz Junior & Marins (2013) evidences five elements of risk that were analyzed that directly influence the supply chain: productivity, quality, organization, business strategy and the supply chain itself. Variables of relative importance, since they are influenced by the manager of each area and have different perspectives; as well as by the researched context, which affects events such as: economic and political changes of the country (crises), geographical location of suppliers and conflicts between countries. Therefore, the criticality of risk factors in the supply chain risk management should be reviewed periodically.

2.2 Relationship “supplier– company – client” in the SC

Based on the economic, social and cultural contexts, Pereira & Frazão (2009) argue that organizations are no longer independent, they are increasingly narrowing the relationship with their suppliers, in order to develop allies/partners that besides being agile, can positively achieve the expected outcome, which is to meet the customer's needs. Therefore, having a good relationship and effective communication becomes the basis for a positive and lasting relationship in this win-win process.

Supply management has been gaining prominence in the organizations, composing the logistics process and becoming in charge of the negotiations with the suppliers in the chain as regarding price, delivery period, promotions and inventory, thus projecting a more competitive price for the final product (Tacconi et al., 2011).

Through the contact between buyer and supplier in supply chains, Claro & Claro (2004) evidenced in their research that trust is the foundation of relationships where motivating elements are analysed aiming at cooperation. In addition, the authors emphasize that the relationship between buyer and supplier goes beyond simple buying, where the supplier has much more to offer than timely delivery and competitive prices, thus being able to keep continually fuelling the trust deposited in them.

For Tacconi et al. (2014), the development of trust in the purchasing relationship between organizations, i.e., buyers and leaders of an

institution completely trust the supplier company. Nevertheless, the supplier must consider the following variables: degree of communication, customization and delivery timeliness, since these factors are relevant in the building of trust and considered as particularities influencing the supplier's behaviour.

In this way, it is the supplier's duty to supply the organizations with additional products and services, which will compose the logistics defined as the supply chain. However, in order to improve the profits from this arrangement, it is fundamental to build a collaborative partnership between the participating companies for the effectiveness of the supply chain (Rodrigues & Sellitto, 2008).

Organizations that establish connections and that are committed to sharing knowledge and resources, which is what generates gains for the organizations. In addition, it is through the establishment of relationships that buyers and sellers identify opportunities and possible threats on the pathway they wish to follow in the course of their negotiations, and thus being able to redirect the strategy to be taken (Villar & Pereira, 2014).

Alves, Barreto & Martins (2015) list trust as one of the pillars for the development of strategic, long and true relationships among the companies that are part of the supply chain. The authors emphasize that in this new market competition, executors no longer act alone in the pursuit of individual success, however, it is necessary to exchange successes and risks for a win-win relationship, improving the performance of organizations, with offers that are aligned to the demands, innovation capacity as well as the reduction of costs among the supply chain members.

In the context of the supply chain, Deboça & Martins (2015) describe that in vertical relationships practised by most organizations, dealing with customers and suppliers is a connection of competitive nature, since these relationships, when badly planned with the absence of relationship strategies, show resistance among companies and low level of trust. This causes a generation of value to the end customer; thus, it is necessary to develop technical competence skills and to build trust to make progress in the relationship between the customer and the organization.

For an effective management of the supply chain, Tacconi et al. (2011) point out that the relationship with suppliers is the essential factor for the success of the organization, since in addition to having confidence, which is understood as a competitive advantage, it is necessary to foster: business ethics, efficient operational performance and an exclusive relationship, since suppliers need to have good conduct, dignity and commitment to their attitudes, as well as secrecy about the information exchanged and honesty.

In their research, Vanelle and Salles (2011) state that companies are seeking to improve their supply chain in order to become more competitive in the global context they are inserted. Their remarks were based on the relationship with their suppliers, emphasizing that they must operate with technology productive capacity as well as offering a competitive price, which is still seen as a strong decision-making criterion on purchase decisions.

Gattorna (2009) reports that strategic partnerships thrive on long-standing trading relationships based on knowledge sharing, both aligned with their skills, objectives, and detection of market opportunities and threats in a constantly changing market.

Therefore, in this context, we can observe that the relationship within the supply chain is seen as a key factor in the construction and durability of it. Luna & Kricheldorf (2011) explain that the performance of an organization is a result of the relationship of the elements belonging to the chain, such as customers and suppliers, which must be aligned with the same purpose and objectives in order to achieve their envisioned goals.

2.3 Supply Chain Implementation: a critical review of the literature

Given that supply chains aim to manage all the internal and external logistic tasks of an organization, it is seen as a potential tool that requires techniques and dedication from entrepreneurs to become viable. The SCM tends to manage all those involved in a network of goods, services or even finance, where due to their demand and complexity, the so-called alliances or partnerships between the industry and its distributors are poorly structured, requiring mechanisms to make them more comprehensive

and efficient (Sucupira, 2016).

In Table 2, Melo & Alcântara (2016) show the main critical factors identified in the implementation of the supply chain process, so this process can be successful.

Table 2. Critical factors identified in the supply chain implementation process

Literature	Critical factors
Mentzer & Moon (2005)	Coordination of marketing activities, demand planning and demand forecasting management.
Jüttner et al., (2007)	Coordination between process, configuration and social interactions.
Croxton et al., (2008)	Integration of strategic sub-processes and operational sub-processes with supply chain management processes.
Hilletofth et al. (2009)	Creating a demand, meeting the demand and coordinating these two processes through collaboration.
Rexhausen et al., (2012)	Demand segmentation, demand forecasting, sales and operations planning and level of adherence to demand management.
Anning et al., (2013) e Esper et al., (2010)	Integration and coordination between the processes of demand and the processes of supply.
Melo & Alcântara (2015)	Information sharing; planning and execution of joint actions; inter and intra-company interactions; performance indicators; involvement of senior management; segmentation of customers and suppliers; Information Technology.

Source: based on Melo & Alcântara (2016, p. 572).

Thus, it turns out that the implementation of the supply chain management requires changes in the organization's business process. Therefore, Pires (2004) considers that this process requires management and integration of the flow of information, so it can be done in a timely manner so they can focus on the end customer. And, to achieve the goals of the organization it is necessary to understand how to evaluate the system and control it, a topic that will be discussed next.

The literature review has pointed out warnings and limitations about the progress of the management and the supply chain management to the organization. Wood Jr. & Zuffo (1998) had already found out that almost 150 companies,

informally addressed, were still in the zero phase of integrated logistics, exclusively carrying out intra-firm materials management activities. In its five-phase model (0 to 4), the third and fourth phases deal specifically with supply chain management, which includes suppliers and customers in a systemic view of the company. According to the authors, these companies placed more emphasis on inventory management, material handling and warehousing than on the integration of intra-firm and inter-firm logistic processes.

Accordingly, Saad et al. (2002) also concludes that although managers and specialists of companies had some knowledge about supply chain and its management, they needed a better conceptual understanding as well as new and more systematic approaches for its implementation.

From the theoretical point of view, inconsistent frameworks on supply chain management have been presented due to the incoherent use of elements or constructs in the development of these models. Thus, further studies on supply chain management should be led to a unified theory that contemplates coherent elements in these frameworks (Soni & Kodali, 2013).

The approach of supply chain management and its application in companies is still not entirely clear and needs more private viewpoints, coming from those who are most interested in its practical implementation: the managers themselves.

3 Methodology

The research has a descriptive step of quantitative character that was carried out through a questionnaire. The results were tabulated and analysed through the statistical method (Rodrigues, 2015). The purpose of the data analysis is to verify the perceptions or understanding of the companies from the city of São Marcos/RS, in the view of its managers, about the design, importance and management of the supply chain.

The research also presents a qualitative step that aims to corroborate with the findings of the quantitative research. In this step, we interviewed a manager of the purchasing area of a large company belonging to the metal-mechanic sector of the city of São Marcos.

3.1. Quantitative step

To carry out quantitative research, we used a questionnaire with multiple scales (Rosa, 2004) adapted from a master's degree student dissertation. The key questions are presented in the search results chapter.

3.1.1 Population and sample

For Malhotra (2012, p.270), a research population is the sum of all elements that share a common feature set, which is the universe for the research problem. Sampling is defined as a subset of the universe or population, which is selected from statistical methods and can be targeted to a group in the pursuit of the planned objectives through the study (Samara & Barros, 2007; Roesch, 2005).

The population of this research is constituted by companies of the industrial sector in the city of São Marcos, in the state of Rio Grande do Sul, because of their better supply chain structure when compared to those of commerce and services. According to data provided by the City Hall of São Marcos/RS as well as gross value-added analysis, there is a population of 67 manufacturing companies of durable and non-durable goods in the municipality. We used a quantitative research questionnaire to gather information from these companies. Table 3 shows that the city of São Marcos has the same economic distribution by sector when compared to the city of Caxias do Sul, which is the second metal-mechanic hub of Brazil, as well when compared to the State of Rio Grande do Sul as regarding Gross Added Value (GAV). The service sector ranks first, followed by the industrial sector and finally by agriculture and livestock. In terms of revenue, the industrial sector of the city of São Marcos represents 52.10% of its total revenue, followed by the agricultural activity 18.06%, wholesale and retail trade 19.85% and services 9.96% (São Marcos City Hall, 2016).

Table 3. Comparison of the representativeness of the sectors in the state economy

VARIABLES	VAB FARMING (in BRL)	VAB INDUSTRY (in BRL)	VAB SERVICES (in BRL)	GDP PER CAPITA (EACH PERSON) (in BRL)
São Marcos	≈ 29 million	≈ 166 million	≈ 308 million	27,991.19

Caxias do Sul	≈ 232 million	≈ 7 billion	≈ 11 billion	47,586.65
Rio Grande do Sul	≈ 28 billion	≈ 72 billion	≈ 208 billion	≈ 357 billion

Source: FEE. Centre for Economic and Social Indicators, Regional Accounts Core (2016/2017).

3.1.2 Data collection

Data collection was performed through a questionnaire obtained from the final dissertation of Rosa (2004). We made some changes in the questionnaire to align it with the objective proposed in this research. Some of the original questions were not used for the reason mentioned above. We also standardized the rating scale from 1 to 5. The original questionnaire used different scales and denominations ranging from 1 to 3, sometimes 1 to 5 and sometimes 1 to 8, and some questions presented alternatives of simple and multiple-choice responses. We sent the questionnaire for data collection to the 67 companies of the city of São Marcos/RS.

3.1.3 Pre-test and questionnaire

According to Gil (2010), the pre-test is used in order to evaluate the data collection instrument, verifying if the selected respondents identified difficulties in the understanding of any questions, as well as if there are any difficult terms to understand that can be confusing.

Firstly, we interviewed a professional from a large company based in Caxias do Sul, who suggested modifications in some academic terminology so it would be clearer for the target audience.

After that, the questionnaire with the suggested changes was sent to a professor with Ph.D. in Administration of the University of Caxias do Sul, who analysed and suggested the consolidation of some questions, since they addressed the same topic, avoiding response repetition and contradictions. After validating the questionnaire as regarding its concept and writing, it was sent to the 67 industrial companies of the city of São Marcos/RS. We also requested that they register their agreement on the presence, implementation and importance of practices and actions, as well as critical aspects of processes developed with suppliers and customers in the context of the supply chain management.

3.2 Qualitative step

We applied the qualitative depth and exploratory research method with the use of a questionnaire based on the quantitative questionnaire, aiming to confirm the general results of field research (Samara & Barros, 2007; Malhotra, 2012).

3.2.1 Qualitative data collection

We conducted an interview at a big supplier of parts and components for the automotive truck industry, which was founded in 1962 and is the oldest company in the city of São Marcos/RS. The company was selected among the 67 companies of the population because it has a higher level of supply chain management implementation. The respondent was the supply manager, who has been working in this area for 16 years. He has a Law degree from UCS, Post-Graduation in Business Management and Business Education and a master's degree in Economics.

Data were collected through a planned interview with the aid of voice recording in order to obtain a better interpretation of the interviewee's answers. Interviews were carried out according to the script with questions about strategy, constitution and relationship with the suppliers and customers.

3.2.2 Quantitative analysis

Quantitative analysis was performed through the analysis and interpretation of the respondent's answers. The text involving the content of his interview presented in the form of a table next to each question to facilitate its understanding.

4 Results Presentation

As reported in the methodology, quantitative research was carried out in the 67 companies of the city of São Marcos/RS (representing 100% of the population), from which we obtained a sample of 42 questionnaires answered (corresponding to 62.69% of the population).

4.1. Analysis and interpretation of quantitative results

According to Marconi & Lakatos (2008) statistical tabulation and data analysis is represented through tables and charts, and its interpretation is the step that aims at adding a more comprehensive definition to the interviewee's answers, linking them to the other practical and theoretical foundations obtained in the study.

Based on the 42 companies that participated in the research which represented the study population, 40% of the respondents were buyers, 12% directors, 14% managers and 34% managing assistants.

In Table 4, the employee scale is divided according to data from SEBRAE (Brazilian Micro and Small Business Support Service) (2013), in which the size of the companies is classified according to the total number of employees. It is evident that most of the companies participating in the research are classified as micro-enterprise because they have up to 19 employees, as well as small enterprise which have between 20 and 99 employees. On the other hand, there is a company in the region with 500 employees which is classified as a big enterprise.

Table 4. Total number of employees

Total Number of Employees	Frequency	Percentage
1 to 19 employees	20	48%
20 to 99 employees	16	38%
100 to 499 employees	5	12%
Above 500 employees	1	2%
Total	42	100.00%

The metal-mechanics/metallurgical industry stands out as the most representative of the sample with 55%, followed by the furniture industry reported with 19% (Table 5).

Table 5. Business Segment

Business Segment	Frequency	Percentage
Food	0	0.00%
Auto Parts	1	3%
Metal-Mechanics Industry/Metallurgical	23	55%
Furniture	8	19%
Other	2	5%
Plastic/Polymers	4	9 %
Wine Industry	4	9 %
Total	42	100.00%

Figures 1 to 6 show the % of companies that answered affirmatively when asked about the importance of being present and contributing or impeding the development of the management and operation of the supply chain.

In Figure 1, when the managers were asked about which of the processes listed should be integrated into the Supply Chain Management (SCM), there was a high level of agreement, specially about the supply process reaching 100% of respondent companies, with the exception of product development, with less than 50%. This may demonstrate that the companies interviewed consider product development as an internal company activity, an individual technology that should not be brought into the scope of the context of supply chain (SC) management. The result may be associated with lack of trust on suppliers, upstream end suppliers and downstream end distributors and customers. The trust between buyer and seller is one of the key elements for the implementation of supply chain management (Tangpong et al., 2015, Melo & Alcântara, 2015) and appears here as a dissonant aspect for the sample analysed.

Figure 1. Processes that should be integrated into the Supply Chain Management

Companies were asked about the type of information that should be made available or shared with SC partners, suppliers and customers. The results have demonstrated (Figure 2) that the companies are conservative and careful about their sales information, costs, profit margins, strategic planning and sales forecasting, leaving them limited to the internal scope of the organization. This is evidenced by the low percentages of companies that have agreed to these actions. Even production planning and sales strategies present

ambiguous results, not showing predominance in sharing or not. What most of these companies agree to share is what they already share with customers and suppliers: order status, product launch and stock availability. These actions are all essential for supplying and sales, focusing on the transactional aspects of business sustainability. This result corroborates with that obtained by Wood Jr. & Zuffo (1998) 21 years ago, most respondents ranged from Phase 0 to Phase 1 of logistics and supply chain integration. Melo & Alcântara (2015), Anning et al. (2013) and Esper et al. (2010) consider the sharing of information in the chain as a critical element for the implementation and success of supply chain management.

Figure 2. Types of Information made available and shared with partners

The lack of knowledge about SCM techniques was the barrier that had the highest percentage of companies (Figure 3) agreeing that, once present, it hinders the implementation and management of the SC. The other barriers also presented most companies being adherent to the damage they cause to the SCM. This result is fully in line with the findings of Saad et al. (2002) points out that greater knowledge about the SCM theme facilitates its implementation, improving the performance of the chain.

Figure 3. Barriers to Supply Chain Management

With reference to the factors that affect SC integration (Figure 4), and except for the "different price expectations", the other factors were considered as very influential for the SC integration by most companies. The most significant percentages are present in those aspects that are known to interfere directly in the SC material flow. Aspects such as delivery delays, quality problems and problem solving delays can interrupt the continuous supply of resources along the chain, compromising the performance of the internal chain of operations of each company, and the external performance of the SC, as pointed out by Croxton et al. (2008), Hilletofth et al. (2009) e Rexhausen et al. (2012).

Figure 4. Factors affecting SC integration

Regarding the direct benefits that the SCM context can offer, a significant majority of the respondent companies, (Figure 5) consider that this practice contributes greatly to inventory, risk and resources reduction, obsolete inventories as well as the elimination of double work and sales competitiveness. This result is supported by the Mentzer & Moon (2005) promulgations on the coordination between demand management and internal planning that the supply chain management should promote.

Figure 5. SCM Costs Reduction

The SCM greatly contributes to customer service attributes for most of the sample companies, such as reduced lead time, responsiveness under varying demand, more frequent deliveries, agility in problem solving and deadline compliance (Figure 6). These are the aspects that confer performance and market competitiveness to overcome competition or to act in the SC. The first percentage refers to the companies answers in relation to the customers, and the second percentage is in relation to the suppliers, which is based on the perception that these attributes also tend to perform better for both customers and suppliers.

Figure 6. Attributes that tend to be improved by the SCM for customers/suppliers

4.2 Analysis and interpretation of qualitative data

According to Gil (2010), the analysis of the answers obtained through qualitative research consists in assigning a designation to the relevant concepts that are found in the document's texts, in the transcription of the interview and in the records of observations. The responses of the interview conducted with the supply manager (Table 3) were transcribed, revealing that his organization has already a first-tier supply chain management structure of customers and suppliers (through contracts and supply rules - ISO standard). According to the manager, this is seen as a strong point to establish their partnerships with various automakers (customers).

Based on the interview, we can observe that because of its big size, the organization has a supply chain that was initially implemented because of compliance with the automaker's supplying standards. However, because of the decreasing supply demand, due to the country's economic and financial problems, the automakers stopped making big purchases, thus impacting on the chain management process. The SC was supposed to have expanded by now, but it halted on its first tiers. Another factor that has negatively

influenced the development of the chain was the fact that it was a family business. Rooted in a vertical administration structure, the organization reflected the difficulties of changing internal processes as well as releasing funds for such procedures.

Table 3. Transcript of interview with the manager responses

QUESTIONS	ANSWERS
1. Has your company adopted the Configuration or the Supply Chain Management strategy?	"Yes, we have supply chain management."
2. Is it constituted by suppliers, by customers or by both?	"It is currently made up of customers (mostly automakers, which have drastically decreased demand levels due to the current economic and financial crisis in the country), our partners, first-tier suppliers and our organization. "
3. How is the relationship with the suppliers that are part of your supply chain? (contracts, rules and regulations).	"The relationship happens through contracts. We have a supplier manual with rules of delivery, fines for non-compliance as well as penalties for quality and delivery problems. Tabulation and graphical analysis are done to list the three critical suppliers in the chain, the ones with the greatest supply problems. These are called for an alignment meeting and to verify the real reasons for such problems. We also visit the supplier to help with what we can, and if the problem persists, we end the partnership and look for a supplier replacement. "
4. Is this relationship only with the first-tier, or with the other tiers too?	"We only work with the first-tier, but we are already trying to maintain a relationship with the other tiers, in order not to affect the end customer. Because it is a family business and because every process is new, it also depends on well-planned strategic planning, organization, direction, and control. We rely on qualified people, trained staff for inspection and control, as well as money to purchase efficient software that will avoid inventory/delivery failures to the maximum. Once everything is aligned and functioning systematically as a

	single integrated process, we can achieve agility and efficiency in our business processes through a strategic supply chain stretched to the other tiers. "
5. Is your company part of the supply chain of any customers?	Yes, because we have many loyal customers to our brand and to our product quality.
6. If so, which customers? The most important ones? The most strategic ones? The A clients? Among others.	"With all the customers in the OEM market. It is an acronym in English that means the Original Equipment Manufacturer, which is our case in relation to the automakers: Mercedes Benz of Brazil, Renault, Nissan and Fiat are the companies which we have partnership. Therefore, our company manufactures a certain product developed by the automaker's engineering development under total secrecy. "
7. What was the criterion used by customers to include your company in their supply chain?	"A relevant and strategic factor was the ISO/TS standards certification. It is mandatory for automaker's suppliers, and we were already certified before they signed with us. This has given us a competitive edge at the time. We have products all over Brazil, taking our brand everywhere. The company has more than 50 years of experience in the industrial sector. "

Based on the responses transcribed in Table 3, we can verify the risks that members of the supply chain are subject to as a result of external market problems, or internal problems of any of the members, which affect the supply chain as a whole. This risk-sharing characteristic should be known (Soni & Kodali, 2013) and internalized by member companies as a *sine qua non* feature in supply chain implementation and should not be underestimated.

5 Conclusion

As represented in this study, the supply chain consists of cooperation between organizations seen as a dependency-based business arrangement in order to foster strategic positioning and benefit operational capacity (Bowersox, et al., 2014).

In this sense, starting from the research problem, "what processes and aspects are important for the development and success of supply chain management according to the managers themselves?".

In order to meet the pre-established objectives, we used quantitative research methodology by applying a validated and adapted questionnaire within a population of 67 industrial companies, of which 42 were the respondents. We also carried out a qualitative research of depth with exploratory character through a questionnaire based on the quantitative questionnaire.

In this context, the quantitative research showed an industrial audience represented mostly, by micro and small companies from the metal-mechanic sector. From the sample of 42 companies, only one company, the biggest one, has a semi-structured first-tier supply chain, which is more likely to have a well-structured supply management as it has more demands and more capital for investment.

When analysing the other factors, we also concluded that the majority of participants are composed of conservative family businesses, descendants of Italian immigrants who preserve their sales and costs information carefully, which is characteristic of a more individualistic culture such as this one that has established in the hilly region of the state (Heredia, 2017). Consistent with this fact is that when analysing the factors that affect the supply chain, it becomes evident that most consider the lack of trust and lack of knowledge as a barrier to the relationship with the members of the network and to the possible implementation of the SCM.

Reduced lead times, quick response to market demand, more frequent deliveries, problem solving agility, and meeting deadlines are the benefits provided by SCM in both supplier and customer relationships.

Therefore, the information gathered through quantitative research was the base for the analysis of the qualitative interview, which identified a family business that has been in the market for over 50 years, and still has not changed its strict culture-based behaviour. However, this company needs to

reformulate its thinking, breaking paradigms as well as changing its vertical way of conducting processes, to a systemic view of the whole. These changes must begin at the strategic point of the organization, which is the board of directors.

The information collected from the interview meet the beliefs of the micro and small companies that answered the quantitative research. We identified the same line of thought in the participants, on the topic of lack of trust and organizational culture in all relevant relationship issues between members.

The research problem and objectives of this study were fully accomplished. Through quantitative and qualitative research methods applied in the companies of the city of São Marcos/RS, we could verify that when properly managed and administered, the supply chain confers great benefits to the organizations that implement them.

The theoretical contributions of this research refer to the predominance of activities being conducted intra-firm, geared, according to Wood Jr. & Zuffo (1998), essentially for the administration of materials. This finding can be attributed to the small and medium size of the majority of the sample companies. Also supported in the literature by Tacconi et al (2014), only information about the activities to maintain supply and the feasibility of production programs are shared with suppliers and customers, becoming a paradox when the lack of confidence is pointed out as a barrier to the implementation of the SCM. According to the respondents, another finding that corroborates with the literature is the need of having a greater conceptual knowledge about the functioning and results obtained from the SCM (Saad et al., 2002).

In practical matters, the qualitative study reveals that bigger companies, which are members of the first-tier supply chain of automotive vehicle manufacturers, interact with suppliers and customers, also of the first tier, more structured and functionally operative. This inter-firm relationship aims at achieving the desired performance objectives of the SCM or SC which are: price competitiveness, shared risk of demand oscillations, downstream integrated production programs with the automakers, and we can also say that there is a guaranteed demand in periods of economic stability (Soares et al, 2017; Vanelle & Salles, 2011). The empirical results of this study

can contribute to the ratification of the SCM theory, which still lacks an integrative systemic view (Cousins et al., 2006; Jüttner et al., 2007) and the description of more aspects that facilitate and prevent such integration.

6 Implications and Future Research

This study corroborates with what the literature has indicated as the implicit factors in the SC interaction connections, which may favour its implementation and management, or, impair, and reduce the competitiveness of the chain. According to the managers interviewed, a desire of better serving the client as regarding delivery time, inventory reduction and information sharing that is not related to new products, are the aspects that contribute to the SCM effectiveness. On the other hand, mistrust, lack of cooperation and opportunism, accompanied by an unprecedented uniqueness in the sample, which is the lack of knowledge about SC and SCM, make it difficult to fully implement it. These findings promote practical implications on the side of managers in seeking the knowledge about the technical, functional and strategic characteristics of the configuration of the SC in order to apply the concept correctly, obtaining the maximum possible performance. The theoretical implications are related to the question: what size should be a sustainable supply chain that is viable and trustworthy to its members? This question may base a future research in a developed and manageable industrial hub due to its small size, that is of the city of São Marcos. The results obtained can be used to reproduce the same research in larger industrial hubs with greater number of supply chains.

7 Limitations of the Study

The research in its original scale was applied in larger companies than the ones cited in this article, making it difficult to accurately assess the distortions that this can cause in the reliability of the results. Since all the scales were standardized to vary from 1 to 5 (1 = unimportant and 5 = very important) and the sample size is practically equivalent in both studies. We believe that the difference in size did not cause significant distortions in the analyses. In addition, the number of questions was reduced in relation to the original

questionnaire and considering that the response rate in this article was greater than the one originally obtained, we believe that the distortions are within the limits considered acceptable for the survey type with adapted scales.

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