SUPPLY CHAIN INTEGRATION INSIDE A MANUFACTURING COMPANY: DIAGNOSIS OF CURRENT STATUS AND FUTURE OPPORTUNITIES

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Trabalho Aplicado apresentado a Escola de Administração de Empresas de São Paulo da Fundação Getulio Vargas, como requisito para obtenção do título de Mestre em Gestão para a Competitividade.

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RESUMO

Muitas empresas ainda possuem dificuldade para implementar uma estratégia efetiva de Gestão da Cadeia de Suprimentos, principalmente quando se trata de integrar diferentes áreas da companhia e colaborar de forma próxima com os principais fornecedores e clientes. Na literatura, diferentes estudos práticos identificaram fatores facilitadores e inibidores da integração, porém em sua maioria utilizaram para isso visão de múltiplos profissionais, de múltiplas empresas, sem detalhar e apresentar explicações contextuais de uma empresa em específico. Este estudo apresenta uma abordagem diferente, trazendo um estudo de caso em que se analisou, no detalhe, como uma empresa de manufatura está lidando com o desafio de implementar a integração de sua cadeia de suprimentos. Os resultados demonstram que a integração da Cadeia de Suprimentos de fato é uma realidade na indústria, e resultados importantes foram atingidos. Finalmente, para os profissionais da área, são apresentadas algumas propostas de como implementar uma estratégia efetiva de integração.

**Palavras chave:** Integração na Cadeia de Suprimentos; Gestão da Cadeia de Suprimentos; Colaboração.
ABSTRACT

Many organizations still strive to implement an effective Supply Chain Management strategy, especially when it comes to integrate different departments inside the company and collaborate closely with major suppliers and customers. In the literature, different empirical studies have identified enablers and inhibitors of integration, but most of them used multiple companies’ vision and few have presented detailed explanation of a singular context. This study reports a different approach, presenting an in-depth case study, which analyzed how a manufacturing company is dealing with the challenge of implementing Supply Chain Integration. The result suggests that SCI is a reality and important results have been achieved. Finally, some prescriptions on how to implement an effective SCI strategy are suggested for practitioners.

Key words: Supply Chain Integration; Supply Chain Management; Collaboration.
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<th>Description</th>
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<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
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<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
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<td>HR</td>
<td>Human Resources</td>
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<td>RM</td>
<td>Risk Management</td>
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<td>SC</td>
<td>Supply chain</td>
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<td>SCI</td>
<td>Supply chain integration</td>
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1. INTRODUCTION

Companies are always under the pressure to increase competitiveness advantage, through improved quality, lower operational costs and increased profit margins. Thus, reviewing its operations strategy is constantly on the managers’ agenda. In response to these competitive pressures, numerous operations initiatives and practices have emerged and Supply Chain Management (SCM) is one that have been receiving particular attention (Kannan & Tan, 2005, p.153).

As declared by Li, Ragu-Nathan, Ragu-Nathan, & Subba Rao (2006) “effective SCM has become a potentially valuable way of securing competitive advantage and improving organizational performance” (p. 107). Attaran (2004) also reinforces the strategic importance of achieving greater supply chain performance, since it could lead to improvements in productivity and profits, customer positioning, product quality and in long-term relationships with suppliers.

Supply Chain Management (SCM) is not a new concept. Since 1982, when Oliver and Weber (Cooper, Lambert, & Pagh, 1997) first proposed the term, academics, organizations, consultants firms and books have been publishing its own definitions and practical cases. The popularity of the term inside the companies, the increase of courses related to this field and the results achieved for those that understand and applies its concepts, helps to consolidate the role of SCM in current business strategy.

The term Supply Chain can be defined as a set of value-adding activities that happens between a firm’s suppliers and a firm’s customers, connected by the upstream and downstream flow of products, services, finances and information (Harrison, 2004; Mentzer, Keebler, Nix, Smith, & Zacharia, 2001). Similarly, the definition of Supply Chain Management, used by Christopher, (2011), is the management of the upstream and downstream relationships with suppliers and customers, in order to deliver superior customer value at less cost to the supply chain as whole.

Since the origin of the concept of SCM, the focus on integration and chain actors’ relationships has played a major importance. Cooper et al. (1997) explain that SCM evolves through several stages of increasing intra and inter-organizational integration and coordination. For Sweeney (2013), SCM involves “strengthening the linkages between the functions and finding ways for them to pull together” (p. 75).
Currently, companies have global operations, with many entities involved, in a network structure. Competition is no longer company against company, but supply chain against supply chain (Christopher, 2011). Thus, understanding factors that increase integration and collaboration and improve relationships inside the supply chain can be an important way to differentiate itself from competitors. As Stadtler (2005) pointed out in his work, the challenge in controlling the network of organizations that forms the Supply Chain stems from the nature of relationships, which can involve behaviors like information hiding, mistrust and even cheating.

Despite the increase of interdependency between companies, there is still a lot of work to do in this field. As reported by Turkulainen & Ketokivi (2012) research on integration is voluminous but empirical results are still inconclusive and sometimes contradictory, thus the authors recommend examining contextual factors that are driving successful achieved integration. Singh, Garg, & Sachdeva (2018b) also reports a lack in the literature of more practical aspects of collaboration: preparedness towards collaboration or pre requisites to implement collaboration.

A possible reason for this literature gap is that companies and academic institutions has been focusing on SCM initiatives connected with Information Technology, Performance Improvement or Process Control, which can bring more tangible results. When you change the focus to the softer side of operations, in real world, the way companies structure their teams do not stimulate integration between different areas and relationships are not managed properly: performance goals are often conflicting and partners’ (suppliers and customers) opinions are left out in important decisions. Then, the company as whole loses the potential to achieve differentiated results.

1.1 Research question and goals

From the context explained before, arose the research question from where this study originated: “How companies are dealing with the Supply Chain Integration challenge?”. Along with the main question, the research also aimed to:

- Understand the current level of integration and how far companies have progressed;
- Identify the main drivers of internal and external integration through SC professionals’ perspectives as they engage in their integration efforts;
- Find best practices already in place that can be expanded to other areas or companies.

In order to find answers to the previous question and illustrate how integration is developed inside a specific context, a case study was conducted in a Brazilian unit of a global manufacturing
company, producer of consumer goods. This company was chosen for being the global leader in its industrial sector, where it would be possible to study how the leading company has been committed to integration. Also, being part of a global company, the Brazilian unit has the challenge of increasing integration with global partners (other international units and global suppliers). Finally, the company has been implementing a World-class methodology to achieve operational excellence, and one of the pillars is the excellence in Logistics and Customer Service, demanding a full supply chain integration: designing an optimal flow from suppliers to customers.

The ultimate goal is to help Supply Chain professionals and students through this case analysis and through this study’s conclusions. It’s expected to provide ideas and practical strategies so they can promote integration and increase field research.

1.2 Motivation and choice of topic

Due to economic and political factors (oil crisis, natural disasters), supply chains are now more vulnerable to disruptions. Also, the adoption of SCM principles has resulted in more networked, highly dependent organizations, which has increased vulnerabilities in operations (Oke & Gopalakrishnan, 2009). So, as Christopher & Holweg (2011) explains, whereas in the past emphasis in supply chain design was on cost or service optimization, in the current scenario should be upon resilience, the ability to cope with unexpected disturbances and the uncertain business environment.

A survey conducted by MIT Forum for Supply Chain Innovation and PwC with 209 companies from around the world (Simchi-Levi, Kyratzoglou, & Vassiliadis, 2013) assessed how global organizations address the challenges of being exposed to both domestic and international risks. The results showed that among the main factors that enable stronger capabilities at both supply chain and risk management are “Alignment between Partners in the Supply Chain”, “Integration between Internal Business Functions” and “Upstream and Downstream Process Integration”. Therefore, integration represents more than a strong capability for companies to pursue; it will be a requirement to thrive in complex business environments.

Studying available academic studies about integration, it’s possible to find on existing literature a focus on internal functions alignment while launching a new product, ways to strengthen relations with customers or suppliers, or improving collaborations inside the company. A broader and practical approach, understanding the integration in the whole Supply Chain (from supplier to
customer), inside a specific and real context, hasn’t been well explored. This kind of analysis can be really helpful for companies implementing the supply chain project.

With regard to the methodology applied in integration and collaboration papers, quantitative research is the most common method applied, using, for example, large sample surveys with Supply Chain professionals (Basnet & Wisner, 2012; Germain & Iyer, 2006; Huo, Ye, Zhao, & Shou, 2016). Although this type of research can reveal some important insights, it is usually difficulty to fit the findings in to a specific company context. A qualitative approach, then, can be a useful contribution to academy and professional workers.

Thus, the present research was conducted to fill this gap in the literature, enriching academic knowledge about this matter, and increase professional awareness of ways to integrate different actors, achieving a cohesive supply chain.

1.3 Dissertation structure

In order to answer the research question and achieve the objectives mentioned above, this study is organized as follows. First, a review of the existing literature about Supply Chain Management and Integration is provided. Study the literature of Supply Chain was important to understand the role of collaboration and integration inside the Supply Chain Management.

Then, a specific review about Integration was conducted with two main purposes. It was possible to find frameworks to measure the level of integration (Frohlich & Westbrook, 2001; Jin, Fawcett & Fawcett, 2013) both with parties within the organization and with partners outside the company, as suppliers or customers. Also, factors already identified as enablers or inhibitors of integration in previous works (see page 37) were identified and used to create the interview protocol that was later applied in the field research.

Following the theoretical background, we present the research design and the methodology chose to achieve the goals mentioned before. Next, data collected in the case study is presented, followed by discussions and results achieved through the methodology. In this section there is a check if the study was able to address the main research question and the other topics of interest of this work. Finally, we present this work’s conclusions, limitations and future opportunities to enrich this topic or expand to other areas and companies.
2. LITERATURE REVIEW

The main idea of this chapter is to create a proper theoretical background about Supply Chain Integration and Collaboration. Also, the study of the main papers and authors in the subject will be helpful to understand how integration is happening in the company that will be the focus of this research.

This chapter is divided in two main sections. The first section, more general, will bring main terminologies and concepts related to Supply Chain Management, in order to present the subject and contextualize why integration and relationships are relevant for operations. The next section will focus on Integration, bringing specific concepts (theoretical frameworks, benefits and main drivers) to help prepare for the case study. Finally, this chapter closes with a reflection about the main findings of the literature.

2.1 Supply Chain Management

Supply Chain can be defined as a “network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer” (Christopher, 2011, p. 13). Aitken (1998) also states that these organizations are “mutually and co-operatively working together to control, manage and improve the flow of materials and information” (p. 67). All vendors, service providers and customers are links in the supply chain, through which flow raw materials and finished goods, information, service and finances.

Traditionally, supply chains used to have a linear configuration, what Mentzer et al. (2001) call “direct supply chain”. This type of arrangement, as the authors explain, which consists of a company, a supplier and a customer, illustrates a less complex supply chain, that could be found in very verticalized companies, that owned most of the processes to deliver goods to the final consumer. But, as the portfolio of products receives more options, with reduced life-cycles, and the number of suppliers and partners increase, this simpler configuration is no longer viable. Also, with globalization, the advent of Internet and new political and economic conjuncture, business are becoming more complex and the structure of supply chains is following this trend. As the complexity increases, more companies are involved in the upstream and downstream flow in an arrangement called “ultimate supply chain”, as illustrated by Figure 1 (Mentzer et al., 2001).
It should be noticed, though, that supply chain isn’t just a term to represent the various organizations that are connected through business. It can also be used to represent the different functions inside a company connected to manage the different flows. It’s what Prater & Whitehead (2013) names “internal supply chain”. Inside an organization that are different functions involved in the process to deliver a product or service to the customer, which includes materials and service purchase, inventory management, manufacturing, storage and distribution. Each company names the departments as it finds more suitable for its business, but typically it involves Procurement, Planning, Manufacturing, Sales and Logistics.

All the definitions and concepts described above can be illustrated in a complete scheme, as shown in Figure 2, developed by Prater & Whitehead (2013). The scheme represents the interdependency between functions inside an organization and between partners (suppliers, supplier’s supplier, customers, and so on). The challenge of managing this supply chain, which will be detailed in the next section, lies mainly on coordinating the different functions and partners in order to guarantee that the different flows are able to satisfy the customer and generate profits to the whole chain.
2.1.1 The concept of Supply Chain Management

The term Supply Chain Management (SCM) is a very consolidated concept, used constantly in the corporate world and academic research. Christopher (2011) defines SCM as “the management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole” (p. 3). As explained by Mentzer et al. (2001), Supply Chain Management is the implementation of a supply chain orientation in customers and suppliers, which means recognizing the strategical importance of all the tactical activities involved in the management of the different kinds of flow in a supply chain. The goal of SCM is to implement a process that is efficient and customer-satisfying, and where “the effectiveness of the whole supply chain is more important than the effectiveness of each individual department or group” (Prater & Whitehead, 2013, Kindle's p. 164/3374).

The first time the term has appeared was in 1982, proposed by consultants Oliver and Weber as a new approach for management (Cooper et al. 1997) Since then, companies have begun using the idea and the tools associated to manage and improve its operations. And, as the first articles on SCM were written by consultants, whose interest was to spread knowledge about its main concepts and the potential of what could be a powerful competitive weapon, academic papers exploring its meaning and implementation were released only several years later (Ellram & Cooper, 2014).

Figure 2: Supply Chain Illustration.
Source: Prater & Whitehead (2013)
Over the years, it’s evident that SCM has been evolving both as a discipline and as a management philosophy (which represents the set of processes a company implement in order to increase operational excellence and sustainable competitive advantage). As a discipline, SCM has been evolving through the knowledge development, which, for example, resulted from the large number of articles available in the most renowned academic journals in Operations Management (Journal of Business Logistics and International Journal of Physical Distribution & Logistics Management, just to cite a few). Also, SCM knowledge has been developed with the increase of focused courses and master programs in universities and others scholar institutions.

The evolution as a philosophy can be demonstrated, as suggested by Ellram & Cooper (2014), by many companies that were able to understand the main SCM concepts and successfully implement it, including McDonald’s, Amazon and Walmart. The favorable results achieved by companies, the growth of Supply Chain Management as a major field of study and its popularity among students and employers supports that SCM works (Ellram & Cooper, 2014).

Indeed, despite its popularity and evolution, Supply Chain Management still remains a complicated matter, since related concepts and tools are easier to read in theory than applied in practice. As explained by Stock & Boyer (2009), one of the causes can be the difficulty to find a more comprehensive SCM definition in the literature, or even the lack of a consistent stream of research or theoretical ambiguity. The result, according to the authors, is confusion about the difference between SCM and Logistics, the arise of misunderstandings in supply chain executives about the functions and processes they should claim authority and be responsible for and, finally, the complexity to benchmark other companies’ structure and metrics.

Another theory to explain the fact that many companies fail to implement SCM and follow academic prescriptions, is presented by Sweeney, Grant, & Mangan (2018). The authors noticed during empirical research that although it appears to exist a high level of understanding of Logistics and SCM concepts and principles, there’s still room for improvement in how to implement this thinking. Especially when each company has a different economic and cultural context, different performance indicators and different business strategy and priorities.

According to the authors, a critical success factor to a better implementation of SCM theory is the adoption of a more strategic approach. This view is also supported by Stank, Dittmann, & Autry (2011), who claim that the “development of a supply chain strategy provides the key to overcoming the barriers to supply chain performance improvement” (p. 942). As well stated by a
senior executive responsible for multiple functions inside a supply chain, during a focus group conducted by Sweeney et al., (2018), if SCM is not treated as a strategic issue and has mainly a tactical or operational focus, the inevitable results is “fire-fighting” and crisis management throughout the supply chain. Hence, it can lead to frustration and lack of credibility in its potential.

2.1.2 Strategic role of Supply Chain Management

Before understanding why SCM has, or should has, a strategic importance inside the organizations, it’s important to gain deeper insight about what is strategy in Operations Management. In order to do so, a relevant source in this field is the work published by Michael Porter, an American researcher and professor at the Harvard Business School. As explained by Porter (1996), in order to achieve competitive advantage or, in other words, to outperform rivals, a company needs to establish a sustainable difference, by choosing its business strategy. The strategy, according to the author’s work, “must deliver greater value to customers or create comparable value at a lower cost or do both” (p. 62). Value is what customers are willing to pay, and greater value can be offered either by offering lower prices than competition for similar benefits or providing unique benefits that more than offset a higher price (Porter, 1985).

Whether a company achieve its competitive advantage by cost leadership or by differentiation, SCM plays a major role in this achievement. A cost leadership strategy needs an efficiency focus in all activities and processes executed inside the supply chain – from the purchasing of an item to the delivery of product or service to the final user. Similarly, a differentiation strategy can only be successful if a company truly understand and coordinate its supply chain – the difference must be relevant to customers, the company must be able to execute the strategy internally and its suppliers should have the capacity to support this execution. As summarized by Christopher (2011), finding initiatives to increase efficiency and delivering superior value to customers are not activities only performed by the focal firm in a network, but by all entities connected.

Also, SCM has been gaining strategic relevance as the business environment began to change and become more complex. According to Christopher & Ryals (2014), in the environment in which the idea of supply chain management originally emerged there was a relatively stability and greater availability of resources at affordable prices. Nowadays, we no longer see these conditions. Over the years, supply chains have been pressured by different forces, that together created complex and turbulent business conditions that prevails today. Thus, in order to adapt to this new global
conjuncture and respond to these challenging conditions, supply chains need to rethink its structure and *modus operandi*, developing a new set of capabilities that will enable them to succeed and remain competitive. Figure 3, below, depicts this modern phenomenon framework. The role of a supply chain manager is to understand how to resist and adapt to these forces and guarantee that a supply chain as a whole, not only the focal firm but its main partners, is coordinated and prepared to develop these capabilities.

![Figure 3: Preparing for business complexities through Supply Chain Management. Source: Developed by the author.](image)

The scheme shows that supply chains are susceptible to different pressures and forces, that have been changing the business environment. One of the most obvious and notable is the **advance of new technologies**, which has caused a variety of effects on the way companies operate. First, it allowed the expansion of global business, since the communication between different locations has become much faster and cheaper. Second, it created new distribution channels, which has also helped to extend a company’s reach to global markets. Third, it helped customers to have access to information about new products release, prices offered by different companies and other customers’ reviews. Finally, it enabled a series of innovations and now companies are able to have a richer portfolio of products, with a decreased time to market, and to create different experiences when offering a service.

Technology and Internet, consequently, created other types of pressures on supply chains. **Globalization** is one of the most relevant. The possibility of global trade and the increasing importance of emerging markets (China and India, to give examples), have led companies to outsource a significant percentage of its activities. As a result, supply chains have lengthened and fragmented and are now composed of extensive supply networks (Gaur, 2013; Lee, 2013).
Managing and coordinating partners of the network has become an important challenge of operations professionals.

Due to the advances in technology and the advent of the digital era, supply chains are also under the pressure of **Customer empowerment**. As pointed by Edelman & Singer (2015), with the digital tools available, consumers can easily research and compare products, places orders and get doorstep deliveries. Information-enabled consumers have been causing a change in the power locus, that has been shifting downstream, from producers and retailers to buyers and users (Christopher & Ryals, 2014). Thus, consumers demand has to be taken into consideration in any supply chain operations planning and strategy; it can no longer be ignored. As the authors explain, supply chains need to respond to a changing business environment with a new way of thinking, what they term as demand chain management. This means supply chain needs to be designed from the customer backward - demand pull - instead of from the factory outward – supply push - (Christopher & Ryals, 2014).

Technology has also enabled companies to innovate, as explained before, and products portfolio are now much broader, including items with different functionalities and designs, and less standard, since customization is an important trend. Also, customers now are much more demanding and discerning when shopping for a product or a service and they have constantly changing needs. As a result, **product development and launch** have to be a faster and flexible process, that creates product variety and shortens product life cycle. Supply chains, then, must support this process and ensure that all partners are well orchestrated to deliver the product or service and adapt whenever necessary: they need to be responsive. According to Christopher (2011) the responsive organization not only put the customer at the center of the business, but also design its systems and process with the objective of improving the speed of response and its reliability. Also, a responsive supply chain strategy implements socio-relational integration with strategic suppliers and customers (Roh, Hong, & Hokey, 2014).

All the forces mentioned before have been changing the way supply chains operate and forging the way business should be conducted. But there are some external events that companies cannot control and are difficult to forecast that can destroy all the effort put into adapting to previous forces. Political and economic crisis, natural disasters, worker’s strikes, oil price fluctuations, global recession: recent events reminded companies how uncertain is the environment they operate. In the opinion of Christopher & Holweg (2011), we are facing an “era of turbulence”,
when we will see a higher variance on important business parameters: from energy cost to currency exchange rates. Thus, supply chains are facing different vulnerabilities, defined by Fiksel et al. (2015) as the factors that make an enterprise susceptible to disruptions. The authors suggest that organizations should cultivate resilience, so they can prosper in face of turbulent change and assure business continuity: that means understanding their supply chain vulnerabilities and developing capabilities to improve their adaptability when dealing with disturbances.

Finally, more recently, there has been an increasing pressure on firms, from different stakeholders, to incorporate social, environmental and economic responsibility principles into supply chain management strategies (Tate, Ellram, & Kirchoff, 2010). Companies are now forced to take responsibility for the entire life cycles of their products, wherever they may be in the supply chain (Gaur, 2013).

From the context explained in previous paragraphs, it can be seen that the contemporary supply chain is embedded in complex and turbulent circumstances, where in order to remain competitive and guarantee financial sustainability companies must develop a set of different capabilities. Innovation, wider supply chain perspective, demand-driven strategy, responsiveness, resilience and social, economic and environmental responsibility are some of the most relevant, both according to the management literature and the corporate world.

However, it should be noticed that in order to work, these capabilities should be developed in the entire supply chain. As stated by Christopher (2011), currently, real competition is not company against company, but supply chain against supply chain. The end-to-end process should be managed, and all the partners need to be well integrated to develop and deliver a strategy that meet the requirements of the new business conjuncture, with aligned goals and incentives. This is why SCM has such a strategic role. And this is where lies one of the most relevant challenges of today’s managers: orchestrating the different relationships that exist in the chain to guarantee an effective integration.

**2.1.3 Managing relationships**

As presented by Gaur (2013), “organizations in a supply chain cannot exist in isolation: they neither have control over their costs and profits nor are they able to manage their risk alone” (p. 3). Thus, overcoming the difficulties that supply chains are currently facing and developing the capabilities pointed in Figure 3 requires considerable effort into managing the relations with
partners involved in the end-to-end process. To develop responsiveness, for example, managers need to develop an open-communication channel with its partners, that goes from sharing demand information with customers and fostering collaborative relationships with its suppliers (Roh et al., 2014). Collaboration, through collaborative decision making or risk reward/sharing with partners, is an important factor to develop resilience and the ability to cope with disruptions (Fiksel et al., 2015), just to cite another capability of the framework.

Thus, it can be argued that the relational aspect in Supply Chain Management is of great relevance. After all, customers are people, suppliers are people, those who manage and execute operations are people – supply chains are about people (Sweeney, 2013, p. 76). And then, as Professor Hans-Christian Pfohl wrote, “the success or failure of a business depends on a management’s ability to harness the willing participation and creativity of people” (as cited by Trautrim, Grant, & Chee, 2012, p. 54). Mentzer et al. (2001) have the same line of reasoning, claiming that supply chain relationships, typically long-term, require considerable strategic coordination.

From this perspective, a supply chain professional should have a concern with the alignment of goals, sharing of relevant information, knowledge transfer and a win-win approach with its main partners – aspects that can contribute to form strategic alliances. Human aspects (as, for example, trustworthiness, expertise, and commitment) should also be taken into consideration when building and maintaining partnerships with chain actors (Skandrani, Triki, & Baratli, 2011).

Despite the importance, evidence in the literature (Sweeney et al., 2018; Gaur, 2013; Storey, Emberson, Godsell, & Harrison, 2006) suggests that people dimension has been traditionally neglected in organizations – professionals have been focusing in implementing technology-oriented projects for supply chain improvement or in achieving goals in limited scopes without worrying about coordinating activities with other supply chain members. And this paradox remains a common issue in operations, that can be undermining the potential results an integrated supply chain can deliver.

Some reasons, though, may help to explain why this topic has been underemphasized, and they are mainly linked with the complexity of managing relationships. Supply chains involve different companies that are related through the flow of materials and information, and have different expectations, goals, organizational culture and structure, among other aspects. Manage these various facets is not a simple task: it involves multiple skills, that goes beyond the technical
expertise. And, as explained by Ellinger & Ellinger (2014), firms may be failing to develop in SCM professional the broad range of managerial skills and competencies to foster operational innovation and manage the complexity involved in supply chain processes.

Managing people and relationships will remain an important topic for Supply Chain professionals. Even with the digitalization trend and the advance of technologies, without the talent and skills of managers and the right people, the most sophisticated processes and systems won’t be able to deliver its true potential (Sweeney, 2013). Thus, the next section will focus on concepts and finding about supply chain integration in the literature. This literature review will form the knowledge base to understand how integration can help fostering partnerships in practice.

### 2.2 Supply Chain Integration

Integration is a fundamental area in SCM, with references both in literature and practice. As stated by Frohlich & Westbrook (2001), evidence shows that poorly managed supply chains have one or more value creating process working at cross purposes to others – differently, in well-managed supply chains all process are working together to provide the highest level of customer value. “A well-managed supply chain is then an integrated supply chain” (Pagell, 2004, p. 460). Also, following Sweeney (2013) idea, the change from adversarial relationships to relationships based on mutual trust and benefits, openness and shared goals is one of the big manifestations of the adoption of SCM in recent years.

Prater & Whitehead (2013) also recognizes the importance of integration. The authors claim that an integrated supply chain, from suppliers to customers (including a company’s internal departments), is the long-term goal of SCM. They believe that integration along with coordination “supports the structure of the supply chain and facilitates SCM” (p. 244 of 3374 from Kindle), which is illustrated in the framework shown in Figure 4.
The practical evidence can be drawn from a recent study conducted by MIT Forum for Supply Chain Innovation and PwC (Simchi-Levi, Kyratzoglou, & Vassiliadis, 2013). The study assessed 209 global companies on how these organizations are addressing the challenges in supply chain operations and risk management. From the research, the authors came up with seven final factors that enable stronger capabilities in both SCM and risk reduction, as can be seen in Figure 5. Strategic alignment, integration between internal functions and with upstream and downstream partners are considered the most important factors by the survey participants.

Figure 4: Supply Chain Management framework.
Source: Prater & Whitehead (2013)

![Figure 4: Supply Chain Management framework.](source)

Figure 5: Factors that enable stronger capabilities on SCM and RM.
Source: Simchi-Levi et al. (2013)

![Figure 5: Factors that enable stronger capabilities on SCM and RM.](source)
The path to reach this level of integration begins with the correct understanding not only of the meaning of integration and related concepts but also the benefits that can be achieved with closer supply chain links. Also, the stages of development and factors that can enable or hinder progress towards perfect alignment, can help companies build their own way to a higher level of “supply chain sophistication” (Simchi-Levi et al., 2013).

### 2.2.1 Definitions

One of the most rich definitions of Supply Chain Integration (SCI) is the one offered by Flynn, Huo, & Zhao (2010):

> Supply chain integration (SCI) is the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra and inter-organizational processes, in order to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer (p. 58).

Stevens & Johnson (2016) have a similar definition:

> We posit that supply chain integration is the alignment, linkage and co-ordination of people, processes, information, knowledge, and strategies across the supply chain between all points of contact and influence to facilitate the efficient and effective flows of material, money, information and knowledge in response to customer needs. (...) SCI is characterized by “joined up thinking, working and decision making” underpinned by principles of flow, simplicity, and the minimization of waste (p. 3-4).

Both definitions make it clear the multidimensional aspect of integration, that is characterized by the collaboration between parties, the strategic alignment of processes and metrics and the management of relationships. Collaboration here will be considered as an antecedent of integration and will follow the work of Fawcett, Magnan, & McCarter (2008b), that define it as the ability to work across organizational boundaries and involves the sharing of resources - information, people, technology - among SC members to create synergies.
A company’s efforts towards integration and the activities within its scope can be made in two main directions. The first is vertical, which includes integration with customers and suppliers (external) and across functions inside and organization (internal); and the second is horizontal, which includes competitors and other organizations (Barratt, 2004). The horizontal integration and collaboration can be made when a company has available capacity to share or when there are possible synergies between different business; however, it won’t be the focus of this study. Here, the focus is on vertical integration, which scope is illustrated in Figure 6.

As explained by Flynn et al. (2010) internal integration and external integration play different roles in the context of SCI, but they are both important in allowing supply chain members to act in a concerted way. While internal integration is focused on integrating the process of different departments, external integration is concerned with establishing close, interactive relationships with customers and suppliers.

![Figure 6: The scope of vertical integration](image)

Source: Barratt (2004)
The base for building an integration process across the supply chain is the **internal integration**. It’s difficult to imagine a company well integrated with its main customers and suppliers, but having internal departments disconnected and working with conflicting purposes. According to Harisson & van Hoek (2008), when key functional domains don’t align around priorities, opportunities and approaches, they impede supply chain efforts and might stand in the way between “great plan” and “great success” (p. 298).

The internal supply chain is formed by the departments involved in the functions from buying to selling. And the **internal integration** focuses on moving from the traditional departmentalization and working in “silos” to a more collaborative organization, where information sharing, strategic planning meetings, alignment of goals and measures and communications among different levels are important elements of this transition (Flynn et al., 2010; Jin et al., 2013; Swink, Narasimhan, & Wang, 2007).

**External integration with customers** is the process of acquiring and assimilating customer requirements information and related knowledge, as well as building closer relationships with them (Swink et al., 2007). According to Stevens & Johnson (2016), the basis for supply chain customer collaboration is cultural and process integration, whereby both parties work together with its insights and capabilities to develop a mutually agreed demand forecast, that answer customer’s needs while respecting the firm’s capacity.

Close integration with customers can enhance customer service, that will lead to higher levels of customer satisfaction, loyalty and increase market share (Fawcett & Magnan, 2001; Wu, Chuang, & Hsu, 2014). Also, according to the authors, firms can establish mature programs for demand forecasting, product design and coordinated promotions.

Moving upstream the supply chain, **external integration with suppliers** indicates the link of a firm with its network of suppliers, by which ideas and solutions are exchanged (Narasimhan & Narayanan, 2013). Swink et al. (2007) define supplier integration as “the process of acquiring and sharing operational, technical and financial information and related knowledge with the supplier and vice versa”. The process includes different types of activities, such as co-development activities, shared information systems and building of deeper and long-term relationships (Stevens & Johnson, 2016; Swink et al., 2007).

**Integrating with suppliers** is an activity that is gaining relevance, especially because of the outsourcing trend and the strategy of companies to focus on the core business. Despite that, as
noticed by Jin et al. (2013), companies are more proactive in their efforts to collaborate with customers than with suppliers, relying on leverage and power to achieve upstream supply chain goals. Commonly, the contact with suppliers is to talk about quality problems, delivery delays or cost decrease negotiations. Tescari & Brito (2016) suggest that if companies engage in more collaborative relationships with suppliers, both parties can capture more value from its relationships, resulting in better performance and competitiveness.

It’s important to notice, though, that not all departments, suppliers and customers should receive the same effort towards integration. Managers should define the partners that have the greatest potential or participation in a company’s business strategy. As remarked by Jin et al. (2013), to avoid wasting scare resources where limited value-creation potential exists, selective integration engagement is an important approach.

2.2.2 Benefits

Integration in the supply chain can bring different benefits for members and for business in general. Although the financial performance is the most attractive and documented (Flynn et al., 2010; Germain & Iyer, 2006; R Narasimhan & Kim, 2002; Vickery et al., 2003) benefit, other positive outcomes can arise from the efforts of closer and coordinated supply chain member’s activities:

- **Increased innovation capacity:** according to Narasimhan & Narayanan (2013), when the firm’s development strategy is aligned with its supplier integration efforts, internal knowledge can be combined with that of its supply chain to improve new value creation to the organization and its customers. Oke, Prajogo, & Jayaram (2013) support this vision, claiming that enduring relationships enable customers and suppliers to share and offer expertise that a firm can use in its product development, helping to unleash the innovative potential of the supply chain. Customers’ insights and requirements can help companies to be more assertive in its innovation efforts, creating more relevant solutions (whether it’s a product or a service). Similarly, closer collaboration with suppliers enables the transformation of ideas to viable products, through knowledge sharing and process and product design. All members working together, in a more synchronized arrangement, can also increase speed of development, reducing time-to-market and increasing competitive advantage.
• **Complexity reduction:** since integration require focus on relationships with key customers and suppliers, complexity reduction and setting of priorities are possible benefits (Swink et al., 2007). Also, as integration requires an increased level of information sharing and open communication, the speed to solve problems can increase and unnecessary bureaucracy can be reduced.

• **Cost reduction and increased efficiency:** different academic papers in the literature claim that the lack of integration results in many types of wastes in the chain, which, in turn, bring additional costs to all members operations. Prater & Whitehead (2013), for example, mention the inventory excess or even the obsolescence as possible issues resulting from a weak effort to integrate and coordinate the supply chain as whole. Inventory represents tied up capital, that also require extra costs for handling and storage. Another example is the one provided by Beth et al. (2003), that says the lack of trust and collaboration can also cause companies to duplicate activities between its own operations and its partners. Thus, an integration strategy can help companies to eliminate wastes, by allowing inventory to cycle through to customers faster (Fawcett, Magnan, & McCarter, 2008a) or by increasing information sharing and joint planning, which can lead to decrease of mistakes and excess production (Flynn et al., 2010).

• **Improved Customer service:** as Narayanan & Rman (2004) states, misaligned incentives may cause stock outs and incorrect forecast, leading to inadequate sales efforts and, ultimately, poor customer service. Therefore, a closer relation with customers offers opportunities for improving the accuracy of demand information and improving the understanding of customers’ requirements (Flynn et al., 2010). On the other side, the authors explain that by developing a good understanding of the manufacturer’s operations, through the establishment of a strong partnership, “suppliers can achieve a higher level of customer service, which, in turn, helps the manufacturers improve their customer service” (p. 60). Also, if the chain is well integrated (including a company’s internal units, strategic customers and suppliers) and all the parties are synchronized, it’s possible to be more responsive to changes in customer needs.
- **Improved business performance**: all the benefits mentioned above will help a company to improve its business results, through the improvement of different financial metrics: market share, profitability, return on sales, return on investment.

2.2.3 Measurement

Besides understanding the concept of integration and the potential benefits it can bring to boost Supply Chain Management, it’s important for a manager to know how it can be applied and how it can be measured throughout its implementation. Especially because going from understanding to implementation is where lies the challenge for professionals. A research conducted by Jin et al. (2013) confirmed that most managers express a desire to pursue SCI more extensively, but they found that it was difficult and costly – thus, there is a discrepancy between awareness and actual commitment to SCI.

Even in academic papers is difficult to find more practical approaches to achieve SCI. A step-by-step guide to pursue integration aligned with performance metrics to measure along the path was not found while the development of the present study. This gap in the literature contributes to the difficulty to implement a more robust integration strategy.

There is, though, some authors that attempted to present some guidelines for practitioners. One roadmap that can provide valuable insights for practical implementation can be founded on Fawcett & Magnan (2001). After developing a research using cross-functional surveys and in-depth interviews with professionals working in SCM related areas, the authors organized their insights and findings in an implementation framework, build “for managers to use as they travel the path to supply chain leadership” (p. 101). The result can be seen in Figure 7.

To summarize, the authors suggest two main stages of an integrative supply chain strategy: planning and scanning. The planning phase starts with the development of an overall understanding of a company’s supply chain (main actors, value proposition, current competencies) and then culminates with defining and communicating the supply chain vision for all supply chain partners. The scanning phase is concerned with cultivating integrative mechanisms, identifying barriers to cooperation and looking for continuous improvement opportunities.

The scanning phase’s activity of sharing the vision among partners is similar with the idea in Beth et al. (2003), that suggest alignment of multiple parts so they have common values and goals as an important factor to build trust and establish harmonious relationships.
In addition to a step-by-step approach to help implementing SCI, a maturity model can be another helpful tool for managers, both for evaluating a company’s evolution in the process and for benchmarking other companies’ progress towards integration. In this sense, literature has more to offer for professionals. Stevens (1989) was one of the first authors to present a model of progress stages to achieve integration. In his work, a 4-stage integration framework was presented, and a company strategy could be classified from Baseline, typified by a fragmented supply chain, to External Integration, where fully supply chain integration is achieved, including customers and suppliers.

Later, Frohlich & Westbrook (2001) developed a new model to represent the different integration strategies a company may adopt in relation to suppliers and customers. The authors’ model included 5 stages: from inward-facing, where no effort of external integration is performed, to outward-facing, where extensive efforts can be seen.
Figure 7: Supply Chain Integration Framework

Source: Fawcett & Magnan (2001)
More recently, there is the framework developed Jin et al. (2013). In their work, the authors realized, after a research conducted with senior-level managers, that companies have different levels of commitment that affect the degree of integration engagement and, consequently, the success of integration and its influence on performance. Jin et al. (2013) called the framework as “Maturity of Commitment to Supply Chain Integration” (p. 222), which assess four dimensions: locus of commitment, extent of commitment, intensity of commitment and the promotion of commitment. As a result of assessing these dimensions, a company can be classified in one of the four stages of maturity, as shown in Figure 8. The maturity framework can be used as an “as-is, to-be” planning tool to define the desired to-be state of SCI. The insights gained from the framework can help managers perform a readiness assessment, leverage existing and potential commitment, and pursue a strategic level of SCI.

![Figure 8: Maturity of commitment to SCI](image)

Source: Jin et al. (2013)

Regardless of the model to be chosen, the important thing is to companies to periodically exercise a self-reflection, in order to diagnose its current level of integration and create an action plan for continuous improvement. The “to-be” state is important to give direction and the “as-is” state tells the necessary amount of resources and energy.
2.2.4 Drivers

Beyond understanding the concept of SCI and its main benefits, it can be especially helpful for practitioners to know factors that can enable integration and collaboration, across main functions and with external partners. In this present study, these factors will be called “drivers” and they will represent conditions or actions that can facilitate efforts at integration (Pagell & Wu, 2006).

Many authors in the literature chose to design a research approach that helped them to identify these factors in an attempt to prescribe actions to guide managers (Pagell & Wu, 2006). Other authors had different research goals but obtained the factors as a secondary research output (Huo et al., 2016). Both cases were studied to identify the main factors that literature suggest as enablers of integration. The findings, in order to simplify and give a clear understanding, were grouped into 8 main categories, which are described in the paragraphs below. Following, in Table 1, it can be found the complete list of the drivers found, with their respective reference.

Communication. Regular and timely communication, as well as information sharing and accessibility, is essential for all the members to be committed in achieving the Supply Chain strategy. Thus, transparent and timely information is an important antecedent for integration’s efforts in the organizations (Ramanathan, Gunasekaran, & Subramanian, 2011). In line with this thinking, for Koufteros, Peng, Lu, & Peters (2014) explicitly sharing firm’s goals, intentions and plans can reduce ambiguity and uncertainty at customers and suppliers and allow them to align their own strategies with those of the focal firm. Prajogo & Olhager (2012) also confirmed, through a quantitative research, that by integrating information, supply chain partners can virtually work as a single entity enabling them to create more value and to be more responsive.

To increase communication among members of supply chain, which can potentially enable integration, Pagell (2004) sees greater value using informal and real-time communication than using formalized or schedule communication. Knowledge (know-how) transfer is a different strategy to increase interaction and communication. Narasimhan & Narayanan (2013) cites the existence of shared mechanisms and common knowledge basis as an important part of supplier integration.

Culture. In a qualitative research with 11 different companies, Pagell (2004) concluded that cultures that encourages openness and teamwork seemed to be related to higher levels of
### Table 1: Drivers of integration reported in the literature

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integration. Consequently, a culture of finding blame rather than solutions and autocratic top down decision making may harm integration. Years of research later, Jin et al., (2013) also concluded that the difficulties of implementing SCI are more related to a cultural and structural phenomenon than a technical issue.

In this way, engaging people to adopt an integrative behavior can be a starting point to enhance integration in a supply chain. (Huo et al., 2016) affirms that an SCI strategy is heavily dependent on the employee’s commitment to a long-term relationship with the firm and on their identification with the firm’s common norms and values. This commitment, for the authors, can lead to collaborative behavior and a strong desire to achieve the firm’s goals. A culture of openness and transparency about the importance of SCI can also help to increase organizational commitment.

Fostering teamwork is also one more important enabler of integration related with the culture of organizations. Effective internal teamwork can not only improve the set-up of synchronized process and the quality of planning, but also enhance the capability to communicate and solve problems with external partners (Zhao et al., 2011).

**Leadership.** Top management influence behavior in organizations – thus, they play an important role in nurturing a positive and supportive culture in the company (Basnet & Wisner, 2012). Leaders, at the corporate level, can take ownership of the integration and break barriers to resistance (Koufteros et al., 2014), since they have the decision-making power and the resources to implement company-wide strategies (Xu et al., 2014). In this way, leadership commitment, or the willingness to engage in an integration strategy for SCM, is an important facilitator.

Along with the commitment, managers should strengthen certain capabilities that can lead the improvement of SCI implementation. One of the capabilities is the development of multiple skills, the ability to work in more than one specialty. As explained by (Huo et al., 2016), multiple-skilled managers can integrate the objectives of different functions and promote effective information exchange, enabling internal integration, and have a greater understanding of supplier and customer requests and needs, enabling the existence of strong external alliances.

Pagell (2004) also suggests that leaders should adopt an open-communication strategy and integrate with the different functions, supporting the whole company to pursue the business objectives.
**Measurement and rewards.** As brought by Wolf (2011), the very concept of integration “asserts that the objectives of different functional areas and partners in a supply chain need to be arranged according to the same set of objectives in order to deliver the highest value to the customer” (p. 222). Thus, the establishment of SC goals that are connected to business strategy and, then, the alignment of these metrics among internal functions and external partners is essential for integration. Companies, though, in order to pursue a winning condition, should propose metrics that communicate the value of SC collaboration and avoid functional or short-term oriented measures (Fawcett et al., 2008b).

Alignment not only of measures but also of incentives is an important part of external SCI strategy. For Ramanathan et al. (2011) incentives are an indirect motivating factor for involvement of supply chain members in collaboration in order to improve overall performance. Narayanan & Rman (2004) is more incisive – for the authors aligning incentives (distributing risks, costs and rewards of doing business in a fairly way across the network) is the only way to “get all the firms in your supply network to play the game so that everybody wins” (p. 3).

For fostering internal integration, along with the proper definition of measures, seeking the company-wide consensus on the goals is crucial – when the consensus has been established is expected that the whole organization will work together to achieve the objectives (Basnet & Wisner, 2012).

**Relationship commitment.** As suggested by Zhao et al. (2011) a relationship commitment can be defined as a willingness to maintain the relationship and it can motivate the exchange partners to increase interaction and maintain the relationship, through shared values and long-term attachment. It is a concern and the establishment of a process to build and maintain the relationships, especially with strategic partners.

According to Fawcett et al. (2008b), establishing trust is one of the most important relationship-building factor, since it enables member of the SC to rely on each other and thereby stimulate collaboration, shared information and resources – important elements of integration. Wu et al. (2014) also highlights that through the establishment of trust, partners increase reliability on contracts and there is a reduction of risk and uncertainty, creating a favorable climate for supply chain member to be willing to integrate.
As part of the commitment with the relational aspect of business, there are some important skills managers and employees should acquire, that can help increase the progress towards SCI. Fawcett, McCarter, Fawcett, G Webb, & Magnan (2015) point out the ability to dedicate time to collaboration strategies, balancing the relationship management activity with tactical decision-making and regular fire-fighting situations. Mohr & Spekman (1994) emphasizes the skill of joint problem solving as way to partners, when facing a common problem, reach a win-win solution, enhancing partnership success.

**Structure.** Christopher (2011) believes that traditional organizations have grown with excessive layers of management and bureaucracy, creating an entrenched and rigid organizational structure, that can harm competitive advantage. Braunscheidel, Suresh, & Boisnier (2010) also states that overly hierarchical organizational structure is not favorable to integration: it is organized around a “functional silo” mentality, with formal rules and policies and a strong focus of functional efficiency – in these cases, hierarchy does not see the benefit of integrating internally or externally. And, in such circumstances, processes within firm and with external partners will be fragmented and disconnected (Zhao et al., 2011).

In their research with leading companies at different stages of the supply chain, Fawcett & Magnan (2001) found that organizational redesign is a prerequisite to creating high-impact supply chain and it must reflect the need for cross-functional collaboration. Zhao et al. (2011) mentions the deployment of cross functional teams as a strategy to increase internal integration.

The literature reports some strategies that companies can adopt in order to have a more integration-driven structure. Basnet & Wisner (2012), for example, suggests a job rotation program, in which managers can rotate through different functions, creating a holistic understanding of the entire supply chain and strengthening relationships with different functions. Complexity reduction is another strategy, that should be on the manager’s agenda. Fawcett et al. (2008b) assert that dealing with the complex aspect that is intrinsic to supply chains can be a major hurdle developing a more collaborative network, since there are too many physical and information flows and different SKUs and relationships to manage. For Christopher (2011) complexity reduction should be a priority and it can be done by finding a balance between over-simplification and a focus on cost and efficiency.
Supply Chain Orientation. Supply Chain Orientation is defined by Mentzer et al. (2001) as “the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in a supply chain” (p. 11). And, according to the authors, when a company have this mindset, leadership is aware of the implications of managing both upstream and downstream flows of products, information, and others. Malhotra et al. (2008) has a similar concept with a different name: they call it a Supply Chain Mindset and define as the ability and willingness to work collaboratively in order to continuously develop their processes and capabilities, as well as their partners (as cited in Lockstrom, Schadel, Moser, & Harrison, 2010).

To develop this awareness and ability, it’s important to adopt a holistic view of the supply chain. Power (2005) affirms that the supply chain-wide perspective requires the chain partners to think and act strategically. Fawcett et al. (2008b) brings the wide understanding of SC strategy, structure and culture as a prerequisite to establish the willingness and ability of collaboration. Aligned with the vision, adopting an end-to-end process management (and not focused on functions or departments) is important to smooth the logistics flow (Christopher, 2011).

In order to achieve a Supply Chain Orientation and the ability to have a holistic view, training and educations programs play an important role. SC education can engage members of an organization in SC projects and proposal and create a context for senior managers to establish priorities and allocate resources (Fawcett, Magnan, & McCarter, 2008). Additionally, training employees in other supply chain functions and process can encourage collaboration with different departments.

The practice of organizing senior-level steering committees is also an approach to leverage integration (Fawcett & Magnan, 2001). In this kind of meetings, different departments, suppliers and customers can participate and discuss problems and opportunities together, leading to joint decision making and sharing of information, best practices and know-how.

Technology. IT and other technologies are essential enablers of Supply Chain Management Beth et al. (2003). Consequently, they are also important for integration – the investments in integrated information technologies is likely to lead a firm to achieve cross functional integration and external integration with suppliers and customers (Vickery et al., 2003). IT infrastructure is important to make information sharing feasible for the different processes of a company Wu et al. (2014). Thus, according to the author, firms should invest in building IT infrastructure for communication goals
and inter-firm applications. In a market where global operations tend to increase and flexible work arrangements (like remote work) are an important trend, technology is more than an enabler, is an imperative.

It should be noticed that all the factors mentioned above are interconnected, which means that achieving one of them doesn’t necessarily guarantee that integration will happen as a consequence. Conversely, these factors together are able to set up an environment more favorable to collaboration and integration, which, by the way, can enhance Supply Chain management and firm performance.

2.2.5 Integration practices

Many practices that can be used as integrative mechanisms, whether to enhance internal or external integration, are reported in the literature. It’s important to notice, though, that these practices are practical activities or projects that translate the previous reported drivers of integration. For example, Fawcett & Magnan (2001) indicate as best practices of integration “Use of clear long-term contract”, that can be connected to the driver Relationship Commitment, and “Transmit orders electronically via EDI or web” that can be associated with the driver Communication. Huo et al. (2016), similarly, mention the practice of “frequent rotation of managers between functions”, that can be related to the driver of Organizational Structure, and the use of “Supplier inputs in the product development projects” also as a practice of Relationship Commitment.

2.3 Concluding thoughts

From the literature review, a first conclusion to draw is the fact that despite years of research (since the ‘80s), there is still room for research and improvement in the domain of implementing SCM. Different papers in the literature reported the difficulties managers face in giving the strategic importance SC deserves, whether for lack of knowledge, lack of time and prioritization, and lack of resources that can support (technology, people, tools).

When it comes to SCI, there are still opportunities to explore. Despite the amount of papers reporting that effective integration (both internal and external) can lead to increased performance (Flynn et al., 2010; Germain & Iyer, 2006; Vickery et al., 2003) and the evidence of different
factors as antecedents of integration, many companies fail or are reluctant in the application of collaboration (Singh, Garg, & Sachdeva, 2018a).

It appears that managers and companies lost track of what really matters in SCM: managing people and relationships, and implementing a Supply Chain orientation in the entire organization. As proposed by Fawcett et al. (2015) individual initiatives such as heavy investments on technology or hiring consultant firms won’t overcome the challenge posed by structure and social factors (e.g., strategic misalignment and low trust, respectively).

In this context, during the years, many authors in the literature were suggesting further research on SCI, both for enriching academic knowledge and helping practitioners to implement an effective and lasting strategy:

- In the opinion of Frohlich & Westbrook (2001) the next generation of research would involve collecting multiple perspectives of the supply chain;
- Pagell (2004) proposed to move research from describing the relationship between integration and performance to prescribing the manner in which integration can be achieved or the actions that can facilitate or hinder efforts at integration;
- Power (2005) noticed a gap between promised benefits and still limited evidence of extensive SCI implementation, and suggested examining factors creating and reinforcing this apparent gap;
- Stock, Boyer, & Harmon (2010) emphasizes that understanding inter and intra-firm relationships and how they are developed, consummated and nurtured are essential;
- Flynn et al. (2010) prescribe the study of factors that influence the degree of customers, supplier and internal integration;
- Turkulainen & Ketokivi (2012) recommended as future research to examine which contextual factors are driving successful achieved integration;
- Christopher & Ryals (2014) suggests identifying ways of suppliers and customers to work together and building enduring and mutually beneficial relationships;
- Singh et al. (2018b) reports a lack of literature on the prerequisites required to implement collaboration.

Therefore, based on the conclusions drawn after the theoretical research and the multiple calls in the literature to further the study about SCI, an opportunity to gain deeper knowledge about how
integration is happening in practice came up. The research purposes in detail and the methodology adopted to achieve these goals will be presented in the next section.

3. METHODOLOGY

The present study was designed in a way to improve the comprehension of the main aspects related to integration inside a supply chain, that are currently being deployed inside companies. It’s expected, with this analysis, the generation of useful insights to help companies and practitioners unleash all the potential benefits of successful SCI strategy, which, as demonstrated before, can lead to better operational results and, ultimately, increased financial performance. Thus, a research framework was created, in order to guide the researcher throughout the conduction of the study, guaranteeing that, at the end, the main purpose would be achieved. The framework is presented in Figure 9.

![Research framework](image.png)

Figure 9: Research framework
Source: Developed by the author

In order to accomplish the research’s goals, the first step was to define the research methodology that would be adopted: quantitative, qualitative or a mixed strategy. Research methodologies vary between two extremes: the quantitative approach, that is more objective and scientific and the qualitative, that tends to be more subjective, interpretive, more constructive (Frankel, Naslund, & Bolumole, 2005). The authors further explain that quantitative research normally focus on the measurement or the analysis of causal relationships between variables,
through extensive use of statistical tools, in order to quantify the extent to which a phenomenon behave in certain situations or the extent to which a sample think or behave in a certain way.

As for the qualitative research, it focuses on studying social problems using an inquiry approach, capturing the views and perspectives of the participants in a study in their natural setting, and producing an inductive analysis, which establishes patterns and helps to explain the problems through existing or emerging concepts (Creswell, 2007; Yin, 2011). There is still the possibility to use both approaches in the same research, when conclusions would be drawn after a joint analysis of qualitative and quantitative data (Yin, 2011).

Näslund (2002), when analyzing Logistics research, suggest furthering the use of qualitative approach, since “logistics problems are often ill-structured, even messy, real-world problems” and calls researchers to gather field information and understand what is going on within organizations. Mangan, Lalwani, & Gardner (2004) confirms that the majority of logistics research is developed by quantitative research. Especially when we look for SCI studies, the use of survey as a method for quantitative research seems to be the majority.

Since the main purpose of this research is to study and gain a deep understanding about the organizational context, that is a complex and dynamic system and the aspect of integration inside the SCM domain, which is also complex and challenging, involving different flows and many people, qualitative research was the chosen methodology.

The approach to conduct the study will be interpretive. Sachan & Datta (2005) describes the interpretivism as an approach to understand a phenomenon. Punch (2014) considers interpretivism as a philosophical position through which people’s opinions and perceptions bring meaning to a situation and it can be used to understand their world. In view of the present study’s purpose, that intends to deeper the comprehension about current practice of SCI, the view and experiences of supply chain professionals will be essential to deliver this result.

After the definition of this study’s main foundation (research questions and methodology), it was necessary to choose a method of investigation (the case study) and an object to be studied (the case), a choice that will be explained in the subsequent sections. The following stages, the definition of the data collection strategy and the selection of a relevant sample, and, finally, how the information gathered was analyzed to generate fruitful insight, will be presented in the further sections.
3.1 Research approach

Doing scientific research requires the choice of a method or strategy to answer the research questions. Quantitative research can be done through the use, for example of experiments or surveys with a sample of the population. When it comes to the qualitative research, there is case study, action research, grounded theory, among others. Yin (2017) suggests three conditions for a researcher to analyze in order to define the most suitable method:

a) **The type of research question:** “what” questions with an exploratory purpose can lead to the use of a survey, with the development of testable hypotheses and propositions for further study. “How” and “Why” questions are more explanatory, and they are more likely to require the use of case study or history.

b) **The control over behavioral events and c) types of events being studied:** in case of “how” and “why” questions, a further condition that helps distinguishing the different strategies is the control the researcher has over the events. When dealing with the past events, the research has neither control nor opportunity to conduct direct observations, so a history study would be the option. Case studies are a good choice when there is no interest to manipulate different behaviors, but the focus is on contemporary events, that allow the researcher to observe or interview persons who are involved in these events. Finally, experiments require directly manipulation of behaviors.

The case study, as described by the author, arises from the need to understand a complex social phenomenon and allows the researcher to conduct an in-depth study and obtain a holistic and real-world perspective. Creswell (2007) presents case study as a type of design in qualitative research that involves studying an issue through one or more cases within a bounded system (context specific).

Based on the methods available, the purpose of this research and the recommendations of the literature, case study was defined as this research’s approach. The intention while choosing this research approach was to design a study looking for a specific context, where it would be possible to look in detail the way Supply Chain Integration was being applied in this setting, in pursuance of a better comprehension about the level of integration, the factors enabling and creating a favorable environment and the best practices already in use.
3.2 The Case Study

Before choosing the case to be studied, it was analyzed the different types of case studies reported in the literature, in order to help defining the boundaries of this research. Stake (2005) identifies three different types of case study, that are displayed in Table 2.

Table 2: Types of case studies

<table>
<thead>
<tr>
<th>Type</th>
<th>Purpose</th>
<th>Interest</th>
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<tbody>
<tr>
<td>Intrinsic case study</td>
<td>Gain deeper understanding of a particular case</td>
<td>The case itself, not what it represents (a particular issue or problem)</td>
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<tr>
<td>Instrumental case study</td>
<td>Provide insight into an issue or create theory through generalization</td>
<td>The case plays a supportive role, since it facilitates the understanding of the problem being studied</td>
</tr>
<tr>
<td>Multiple case study</td>
<td>Gain a better understanding and, if the case, a better theorizing about a large collection of cases</td>
<td>Study a number of cases together, in order to investigate a phenomenon, population, or general condition</td>
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This present research is of explanatory research, i.e. the main concern is to explain a phenomenon and understand factors that explain a particular situation (Gil, 2008). Considering that, following the suggestion of Darke, Shanks, & Broadbent (1998), where explanatory research is being conducted, a single case is able to provide the basis for a phenomenon explanation and, then, an additional research can be undertaken to study other settings.

In view of these concepts, to conduct the study, an instrumental, single-case design was adopted. Instrumental because the interest was to understand a particular situation in the SCM sphere, and the case was the instrument to accomplish this goal. Single-case because focusing on one single context was particularly important to conduct an in-depth investigation and a rich information gathering. Also, this approach differs from the current literature in SCI, where the majority of the research is done through the selection of a sample including different industries and sectors, which, in the opinion of Wu et al. (2014), leads to more general and comprehensive conclusions. Conclusion that do not always explain the factors, the opinions and the reasons a specific answer was provided.
With that in mind, the case chosen was a Brazilian unit of a global manufacturing company of consumer goods. The global company is the leading company in its sector, employing more than 80,000 people in the world, with major brands throughout the world. The Brazilian unit, with 11,000 employees, has three factories, in different locations and two different business offices. Recently, the company adopted a world-class manufacturing excellence program, that demanded a greater supply chain integration, besides the need to integrate globally with the other units and nationally with the different locations. Integration is certainly a challenge and the decision to study this particular context is because its leading position, the challenges mentioned before and the proximity of the final consumer.

The supply chain under study involves basically the suppliers and service providers (mainly carriers), on the upstream side, the manufacturing company, as the focal point, and the retailers and final consumers, on the downstream side.

3.3 Data collection

There are different procedures of data collection reported in the literature. Specifically for the case study, Yin (2006) suggests the following sources of evidence: documents, archival records, interviews, direct observations, participant-observation, physical artifacts and focus groups. The author encourages the use of more than one source, as a way to benefit the case and make the findings more robust. It can also bring more perspectives on the matter.

Considering the options, this study chose the interview and direct observations as the methods to investigate SCI in the case selected. The interview was important to have a direct contact to Supply Chain professionals, during which their explained their opinions and enlightened how different departments and people are dealing with the challenge of integration. The choice is supported by Walsham (1995), who argues that when conducting interpretive case studies, interviews are the primary data source, because they allow to access participant’s views and interpretations of actions and events taking place. Along with the interviews, observations were important to confirm the findings of the interview and generate ideas without the influence of participant’s perspectives, allowing greater confidence that the data collected was valid.

Preceding the fieldwork and the data collection, it was necessary to define the sampling strategy that would allow significant representation of the case being studied. For Creswell (2007) a purposeful sample represents a group of people that can best inform an understanding about the
problem and central phenomenon in study. Regarding the size of the sample, Marshall (1996) states that it is determined by the optimum number required to make legitimate inferences about the population. The author further states that usually there is little to gained from using very large samples.

Taking into account the purpose of the study and the need to differentiate it from previous works, bringing a fresh perspective about SCI, the first decision about the sample was to focus on the tactical level of the employees (senior analysts, coordinators and managers). Usually, SCI research, especially those that analyzed factors that enable or support integration (Fawcett & Magnan, 2001; Flynn et al., 2010; Wolf, 2011), focused on the strategic level, including senior managers, directors and president. Surely, they can bring a more holistic view, but they can be biased to a more optimistic opinion and they may be more distant to what is truly happening in operations. In day-to-day operations, tactical employees are responsible for the major inter-organizational interactions, they are domain experts and know where to get information to make decisions (Koufteros et al., 2014). Basnet & Wisner (2012) drew a similar conclusion from their research, founding that line managers are responsible for the most effective interventions of nurturing SCI.

The sample included 9 participants from different departments related to Supply Chain functions and some of them are in constant contact with external partners, such as suppliers, customers and service providers. The selection of these professionals was inspired by the paper of Pagell (2004), which declares that to truly assess the level of integration one should collect data from respondents responsible for different value creating processes. All participant’s roles and main interactions are displayed in Table 3.
Table 3: Research participants

<table>
<thead>
<tr>
<th>ID</th>
<th>Role</th>
<th>Department</th>
<th>Main internal interactions</th>
<th>Main external interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Manager</td>
<td>Market Operations</td>
<td>Sales, S&amp;OP</td>
<td>-</td>
</tr>
<tr>
<td>R3</td>
<td>Senior Analyst</td>
<td>Intralogistics</td>
<td>R&amp;D, Materials Planning, Procurement</td>
<td>Suppliers, Service Providers</td>
</tr>
<tr>
<td>R4</td>
<td>Coordinator</td>
<td>S&amp;OP</td>
<td>Intralogistics, Materials Planning, Procurement</td>
<td>-</td>
</tr>
<tr>
<td>R5</td>
<td>Coordinator</td>
<td>Inbound Logistics</td>
<td>Manufacturing, Materials Planning</td>
<td>Service providers</td>
</tr>
<tr>
<td>R6</td>
<td>Senior Analyst</td>
<td>International Procurement</td>
<td>R&amp;D, Materials Planning</td>
<td>Suppliers</td>
</tr>
<tr>
<td>R7</td>
<td>Manager</td>
<td>National Procurement</td>
<td>R&amp;D, Materials Planning</td>
<td>Suppliers</td>
</tr>
<tr>
<td>R8</td>
<td>Senior Analyst</td>
<td>Transportation Planning</td>
<td>Procurement, Outbound Logistics</td>
<td>Service providers</td>
</tr>
</tbody>
</table>

Prior to the conduction of the interviews, the researcher turned to the literature for advice about best practices to get the most out of the conversations, especially considering the short time available to talk. The most important topics considered were the following and they were taken from the work of Patton (2002) and Seidman (2006):

- Explain why questions are being asked and what is the purpose of the overall interview – it shows respect and engages the participant to answer in an opened and detailed way;
- Maintain a reasonable level of control over the process – ask focused questions to get the answers you need, listen carefully to assess the quality and relevance of the answers and provide appropriate feedback (verbal or nonverbal) during the interview to the person so he/she knows is on the right track;
• Record and take notes during the interview – an extremely important task since the raw data of the study will be the actual quotations spoken during the interview plus the notes listing the major points discussed and insights provided in the conversation;
• At the root of in-depth interview is the interest in the individual’s stories and perceptions and the meaning people make of the experience;
• Listen carefully and pay attention to the interviewee – not only the explicit words being said, but also the emotions and the nonverbal language.

The interviews were conducted using two different strategies. Two of them were conducted face-to-face, in one of the company’s business office in São Paulo. The others happened through video-conference, either because the participants were from a different unit (from the factory or another company’s office) or because they weren’t available to talk during the visit. All the interviews were conducted from December 2018 to January 2019 and lasted between 30 and 60 minutes each. The interviews were recorded for later in-depth analysis.

The first interview conducted was considered as a pilot interview, which allowed to gather feedback from the participant about the clarity of the questions, the connection between the purpose and the questions and about the inquirer’s attitude. After the feedback, the questions were refined and a new practice was adopted: a previous message was sent to the participants explaining the purpose of the study and the interview, along with some topics of discussion to stimulate the participants to think about the subject and previous experiences that can illustrate their opinions.

As to the observations, according to Marshall & Rossman (2016) they are central to qualitative research and included a wide variety of activities, from hanging around in the setting, talking informally to people and getting to know them to learn people’s routines. In this study, the strategy was to participate in Supply Chain committees, when it was possible to see the issues under discussion and the interaction among the different departments. After the meetings, some participants shared, informally, their impressions and the challenges they faced in their routines. This part of the research was also conducted during December and January, both in São Paulo business office and in a factory located 100Km from the state’s capital. The output from observations are field notes and detailed descriptions of the company’s routine.
3.4 Interview protocol

The development of an interview protocol was an important part of the present research. The idea was to design a checklist of questions that could guide the conversation and assure that all the relevant topics were covered during the interview. Yin (2011) recommends that the protocol should be modest in size and it shouldn’t be used as a list of all the questions that will be verbalized to a participant. Additionally, writing the protocol was an important exercise to reflect about the best ways to ask questions, guaranteeing that the inquiry would be effective and efficient.

Creating the protocol was a four-step approach, as described in Table 4. The questions were written in connection with the main goals of this study: identify the current level of integration, the main factors that act as enablers of integration and the best practices in place. Also, they follow the idea in Swink et al. (2007): rather than simply asking participants “are you integrated?”, they ask for practical examples of integration, reducing the variance and assuring that contextual details on how strategic integration might be achieve would be provided.

There are two points of the protocol that should be emphasized. The first is about the questions concerning external integration: not all the participants have external interactions during their daily routine – in this case, the participants only answered considering their integration with the different Supply Chain departments. The participants with external interactions, were asked to answer considering their key partners. The second point is about the final question, that makes reference to the four levels of integration described in the maturity framework of Jin et al. (2013). When this question was asked, the maturity model was presented and explained to the participants and, then, they were asked to classify the company according to the stages created by the authors. The classification was intentionally asked at the end of the interview, so the respondents could choose a stage based in all the examples and topics discussed during the conversation.

The third-step described in Table 4 mentions the revision of the protocol draft. This task was carried out considering the important guidance of Patton (2002). Some of the advice taken:

- Begin the interview with questions about activities and experiences, that requires minimal recall and interpretation, and then opinions can be asked;
- Ask truly open-ended questions (e.g. What’s your opinion of, what do you think of);
- Avoid dichotomous questions, the ones that suggest only a Yes/No answer, since they limit expression;
- Each question should be singular (“and” in questions can create confusion).
The final interview protocol, used to conduct the interviews, is presented in the Appendix section.

Table 4: 4-step approach to create the interview protocol

<table>
<thead>
<tr>
<th>Stage</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Literature review</td>
<td>Identification of previous protocols and questions that could be used\</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Identification of measures and constructs of integration\</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Organization of a questions’ database classified as: general questions, internal integration, external integration with suppliers, external integration with customers</td>
</tr>
<tr>
<td>2</td>
<td>Development of new questions</td>
<td>Comparing the questions already found versus the points that need to be addressed during the interview and the observations made, new questions were created and added to the protocol</td>
</tr>
<tr>
<td>3</td>
<td>Draft review</td>
<td>Once the draft was ready, a detailed analysis was conducted following the suggestions of Patton (2002)</td>
</tr>
<tr>
<td>4</td>
<td>Pilot test</td>
<td>After the first interview was conducted, some modifications were necessary in order to refine the protocol, fitting into the length of the interview with the time available and, also, to avoid repetitive questions.</td>
</tr>
</tbody>
</table>

3.5 Data analysis

The process of data analyzing began still in the process of data collection. For Eisenhardt (1989) overlapping data analysis with data collection anticipates the analysis and, more importantly, allows researchers to make adjustments in the data collection instruments or change the way the interview is being conducted.

In this study there were three main types of data: handwritten field notes taking during observations, handwritten field notes taking during the interviews and the interview recordings. The challenge of qualitative research lies in extracting from this data significance and relevance and structuring it to communicate what the data reveal (Patton, 2002). Darke et al. (1998) also
declares that the strength of analysis in interpretive studies derives from the strength of the explanation of the phenomena based on the interpretation of data.

Thus, the first step towards interpretation was to gather the data available and treat it, refining into a clear text: handwritten field-notes that contained previously only bullet points were transformed into text and organized in a computer file for each participant and one exclusively for the observation; the recording from the interviews were transcribed into text and organized in the same file. At the end, each participant had his own file and there was an additional file for observations.

The second step involved identifying patterns and codifying the data. Miles, Huberman, & Saldaña (2014) emphasizes the importance of coding, as they believe is a moment of deep analysis and interpretation of the data’s meanings. The authors explain that coding is a task of condensing data and clustering it together around a specific theme or particular research question. In this case, the coding process took place in three cycles: one more comprehensive, including only three categories, related to the research questions (“level of integration”, “driver of integration” and “good practice”); the following cycle, an intermediate one, included naming a second level code, in an open-ended way; the final cycle was performed organizing the second level into clusters. The whole process was managed manually, without the use of a data analysis software. An example of the process, including only the initial and final stage can be seen in Table 5, and the complete list of codes is displayed in Table 6.

Table 5: Example of the coding process

<table>
<thead>
<tr>
<th>Evidence</th>
<th>First-level code</th>
<th>Second-level code</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I believe the first thing is to have a well-defined structure (…) where everybody knows the others areas’ responsibilities and scope”.</td>
<td>Driver</td>
<td>Organizational structure</td>
</tr>
</tbody>
</table>

The drivers of integration were identified in the transcription in different ways: explicitly, when they were clearly told by the participants, and implicitly, when they were related to other aspects. The categories used were the same used in the literature review, with the exception of “Measurement & Rewards” that was modified to “Strategy & Metrics” and “Internal to External Integration”, that was a new category added.
Following the coding process, the third step was the within case analysis. This step of data analysis is usually conducted with multiple-case studies, during which each case is studied in detail, to increase the researcher’s understanding about the phenomenon in question. Similarly, to analyze data from fieldwork, each participant was considered a case and the opinion about the different aspects of integration, that are of interest to this research, were considered, compiled and displayed in tabular form. The eighth participant’s data summary can be seen in Table 7.

Table 6: Codes created for the data codification

<table>
<thead>
<tr>
<th>1st Level Code</th>
<th>2nd Level Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of integration</td>
<td>Maturity level</td>
</tr>
<tr>
<td></td>
<td>As-is description</td>
</tr>
<tr>
<td></td>
<td>To-be improved</td>
</tr>
<tr>
<td></td>
<td>Benefits</td>
</tr>
<tr>
<td>Drivers of integration</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>Culture</td>
</tr>
<tr>
<td></td>
<td>Leadership</td>
</tr>
<tr>
<td></td>
<td>Strategy &amp; Metrics</td>
</tr>
<tr>
<td></td>
<td>Relationship Commitment</td>
</tr>
<tr>
<td></td>
<td>Organizational Structure</td>
</tr>
<tr>
<td></td>
<td>Supply Chain Orientation</td>
</tr>
<tr>
<td></td>
<td>Technology</td>
</tr>
<tr>
<td></td>
<td>Internal to External integration</td>
</tr>
<tr>
<td>Best practices</td>
<td>Daily Routine</td>
</tr>
<tr>
<td></td>
<td>Information sharing</td>
</tr>
<tr>
<td></td>
<td>Process</td>
</tr>
<tr>
<td></td>
<td>Technology</td>
</tr>
<tr>
<td></td>
<td>Special programs</td>
</tr>
</tbody>
</table>

Finally, the last stage of data analysis was the between case analysis. This step involved a cross-participant pattern analysis to help forming an opinion about the case and identifying what would be company’s answer to the research questions. Data from each participant was compiled.
in a database and organized as will be described in the following section – a process that demanded multiple iterations between reading the transcripts, interpreting, organizing and reviewing.

Table 7: Participant R8 data summary

<table>
<thead>
<tr>
<th>Participant:</th>
<th>R8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maturity stage:</strong></td>
<td>Major Commitment</td>
</tr>
</tbody>
</table>
| **As-is description** | • SCI is on the leadership agenda, as a result of crisis, lean structure, demand for better financial performance  
• Wide-consensus on the integration’s importance  
• Necessary departmentalization due to company’s size |
| **To-be improved:** | • Long-term planning for definition of supplier’s strategy  
• Define the kind of information that need to be shared among areas to help the decision-making process |
| **Benefits of SCI** | • Joint decision-making, avoiding negative impact on results due to unilateral decisions;  
• Better planning accuracy;  
• Better relationship with suppliers, customization, improved service level;  
• Customer loyalty, products and brands leadership |
| **Good practices** | • Investment in innovation and technology  
• Continuous improvement mindset |
| **Drivers of integration** | |
| **Category** | **Aspects** |
| Organizational structure | • Definition and communication of organizational chart, job scopes, responsibilities, main interfaces  
• Job rotation as an enabler of knowledge share and relationships strengthening;  
• Avoidance of functions and responsibilities overlap |
| Communication | • Information alignment enable employees to work in the same direction;  
• Automatic or disciplined real-time communication of important Supply Chain topics;  
• Regular leadership meetings to strengthen relationships |
| Relationship commitment | • Long-term agreement for supplier development  
• Definition of a corporative guideline to deal with external partners |
| Culture | • Long-term mindset |
| Strategy & Metrics | • Definition of a strategy and Supply Chain vision with each supplier and client, to drive the relationship commitment |
4. RESULTS

This section was organized, and the results were presented following the three main research purposes: identification of the current level of integration, the enablers of integration and the best SCI practices in place. These results were achieved through in-depth analysis of interviews and observation of the workplace. They provided the foundation of these research’s conclusions and insights that will be presented in the next section on how a company can deal with the SCI challenge in order to be successful.

4.1 Current level of integration

During the interview, the participants were asked to describe integration in the company’s supply chain, using both an internal and external perspective (the latter whenever applicable: when the participant had external interfaces in his / her daily routine – whether with customers or suppliers). Additionally, they were asked to think about how integration was embedded in the organizational strategy and metrics and what were the benefits of an integrated supply chain. All these questions were asked to understand if Supply Chain Integration is really on the agenda of the organization and if SC professionals are really aware of this theme’s relevance. In the last question, after discussing and reflecting on the topic, they were asked to classify the level of the company’s SCI, according to the four-level maturity framework created by Jin et al. (2013) – and each participant’s classification is reported in Table 8.

Most of the participants (67%) classified the company’s commitment to SCI as a Growing Commitment. According to Jin et al. (2013) companies in this stage are engaged in building competencies by integrating cross-functional value-added activities and top management supports greater process integration as a means for improving operational efficiencies and responsiveness – but no champion for external integration exists. This focus on process integration is clearly indicated in some of the participant’s opinions:

“We have a process design that forces this integration (talking about the S&OP process). (…) Our processes are reasonably integrated, and we have integrated systems that address our needs. Functionally, we are OK”. R1

“We have a very robust process that ensure integration and it’s connected with our company’s strategies (talking about the S&OP process). R2
“The company is looking for integration, and we can see that by the new process of development and launch of new products. We now see a much greater integration among areas than any other process we’ve seen before” R3

Regarding external partners, evidence suggest that there is a lower commitment to integration, and no more than small efforts to strengthen the relationship. Also, there is no wide-consensus about the level of external integration. These situations also connect with the Growing Commitment stage.

“I’m a major advocate of collaborative planning with customers – and today we are not able to do that. (...) Today we only have a view of the client’s needs from what is reported by the Sales Team. But, at the end of the day, this information may be biased by a lack of an end-to-end vision about the client’s operations or by self-interest reasons.” R1

“The Sales supervisor has a considerable knowledge about the client, and he is the only one that has it. Thus we have to disseminate this knowledge inside the company so we can improve our decision-making process. Also, there is no formal participation of our client in our annual Strategic Planning and Forecast.” R2

“Today, we are neither prepared to develop our suppliers nor to explore their expertise, knowledge and potential. Our operational team adopts a demanding behavior of “I want that and I want that now”, without understanding what can be done through collaboration and if the supplier is really able to deliver these results. This is detrimental to the relationship.” R5

What appears to be, though, a consensus among participants is that the company has been giving SCI more relevance and achieved some improvements in the last years, illustrated by some of the participant’s quotes:

“I believe integration is embedded in our company’s strategy. The company has increasingly invested and has been asking managers and their departments to increase synergy with other areas. The chain, as a whole, is so stressed to deliver better results, that all inefficiencies and bottlenecks caused by the lack of integration or communication
problems, are being highlighted. Also, the last years crisis demanded a leaner structure, so we no longer have the resources to waste time with rework or fire-fighting.” R8

“The company understood that without integration it has a lot to loose. Integration is increasing, but we are not in an advanced level yet. We are learning to do it, there is still a lot to be done.” R7

In this evolutionary process, all the participants recognize the broad range of benefits that SCI can bring, as illustrated by the following opinions. Many of them are the same benefits found in the literature review and they are mainly related to better financial performance and customer service.

“I believe that Supply Chain integration is essential and there is always opportunity to improve. The more we go through difficult situations, market fluctuations, or demand spikes, we see more and more the need for accurate information; for everyone to use the same numbers, the same reference; for everyone to be considering the other area’s difficulties, priorities and goals, so that everyone is aligned. If there is no synergy, each area will be moving toward a different direction, and in the end, decision-making in one area may negatively impact the output and the deliveries in another area and generate medium- and long-term side effects for the whole company.” R8

“Supply Chain Integration would give a company a bigger competitive advantage. We can deliver better products, faster and cheaper. We can reduce deadlines, reloops, reduce costs.” R3

“Integration reduces complaints, intellectual waste, financial waste and assures proper decision-making” R4

“Integration allows a greater flexibility and responsiveness, a better financial performance, because we have less waste and less unnecessary work. We have better products (…).” R5

“Integration, especially in the planning process, can lead to a better service level and bring benefits both for the relationship between the Sales team and the clients, because I can understand and deliver what they really want and for the Operational team, (…) because they can better prepare themselves to deliver it.” R2
Table 8: Participant's classification of the company’s maturity of commitment to SCI, according to the model of Jin et al. (2013)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Stages</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>X</td>
<td>&quot;I'd say the level would be Growing Commitment - we are trying, we've started discussing about integration, it's not good yet, but at least we are aware of it. (...) Our processes area reasonably integrated and work well (...). What is missing is the face to face integration&quot;.</td>
</tr>
<tr>
<td>R2</td>
<td></td>
<td>&quot;If we think inside our company boundaries, I'd classify as Major Commitment. But looking outside, and comparing our company with others in the market, we may even be classified as Total Commitment. We can really be benchmark in some of our processes.&quot;</td>
</tr>
<tr>
<td>R3</td>
<td>X</td>
<td>“Thinking about the whole company, I see a Growing Commitment. But, if we think about the Supply Chain of New Product Development, I see a Major Commitment’”</td>
</tr>
<tr>
<td>R4</td>
<td>X</td>
<td>“I’d classify as Growing Commitment”</td>
</tr>
<tr>
<td>R5</td>
<td>X</td>
<td>“I’d classify in transition from Growing Commitment to Major Commitment. We are growing, learning to improve. But there is still much to be done”</td>
</tr>
<tr>
<td>R6</td>
<td>X</td>
<td>“I believe we are somewhere in between Growing Commitment and Major Commitment”</td>
</tr>
<tr>
<td>R7</td>
<td>X</td>
<td>“I believe we are in Growing Commitment, we are growing in this matter, but we are not a role model yet. We should move to the next stage in 2 years from now.”</td>
</tr>
<tr>
<td>R8</td>
<td>X</td>
<td>“I believe the company is in the third stage, restructuring itself according to the future strategy”</td>
</tr>
<tr>
<td>R9</td>
<td>X</td>
<td>“I’d say is a Major Commitment”</td>
</tr>
</tbody>
</table>
4.2 Main drivers of integration

To identify the main factors that enable SCI, participants were asked to indicate key success factors that lead to a more sustainable integration strategy. Additionally, some of them presented the difficulties they face during their integration efforts. When Fawcett & Magnan (2001) conducted their research, they realized that the majority of identified bridges to effective SCI are the mirror image of the most prevalent barriers. Along with that, some of the improvements the participants suggested to increase integration and the good practices they reported can be indicators of factors that facilitate integration. Table 9, below, display the drivers identified and the number and identification of the participants that mentioned them at the time of the interview.

Table 9: Drivers of integration identified in the interviews

<table>
<thead>
<tr>
<th>Driver</th>
<th>Number of citations</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>8</td>
<td>R1, R2, R3, R5, R6, R7, R8, R9</td>
</tr>
<tr>
<td>Culture</td>
<td>7</td>
<td>R1, R2, R3, R4, R5, R7, R8</td>
</tr>
<tr>
<td>Leadership</td>
<td>3</td>
<td>R1, R5, R6</td>
</tr>
<tr>
<td>Strategy &amp; Metrics</td>
<td>9</td>
<td>R1, R2, R3, R4, R5, R6, R7, R8, R9</td>
</tr>
<tr>
<td>Relationship commitment</td>
<td>8</td>
<td>R2, R3, R4, R5, R6, R7, R8, R9</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>6</td>
<td>R1, R3, R5, R6, R7, R8</td>
</tr>
<tr>
<td>Supply chain orientation</td>
<td>6</td>
<td>R1, R2, R3, R4, R5, R6</td>
</tr>
<tr>
<td>Technology</td>
<td>3</td>
<td>R2, R4, R7</td>
</tr>
<tr>
<td>Internal to external integration</td>
<td>4</td>
<td>R1, R3, R5, R9</td>
</tr>
</tbody>
</table>

The table shows that Strategy & Metrics, Communication and Relationship Commitment are the main drivers of integration in the participant’s perspective. Also, all the factors mapped in the literature review received, at least, three mentions, confirming the findings from previous authors. The reason these drivers were mentioned by the participants and what is their role in enabling integration are explained in the next paragraphs.

Communication. According to the respondents, communication is indeed an important enabler of integration. But in order to effectively promote more alignment and collaboration, information has to be equally and widely disseminated, to all the levels, it has to be on-line available, so that
everyone can have access anytime, and it has to promote knowledge sharing end-to-end, to all the value creation processes and functions, as stated by different participants:

“Information sharing is the base (for SCI). Information has to be shared, everyone should be able to access what it wants, when it wants and how it wants.” R3

“(…) we should guarantee that information is disseminated with the same quality from the top to the bottom level of our hierarchy.” R1

“(…) when I think about information, it comes to me that - wow, that information was really important; if I only knew it before… - or - if I had known that, I could have done it differently -. And not only strategical information, but sometimes even operational information could be very helpful to improve the decision-making process.” R5

“Two important points to increase integration is make sure the information goes from the top management to the operational level with the same quality and understand how the Sales team can bring more information about the clients and about the market to improve the replenishment process (…)” R2

**Culture.** Different aspects of the organizational culture were perceived as important in executing a SCI strategy: behaviors (openness, optimism, politics), values and mindsets (long-term strategy). It appears that, according to the comments, culture enables the creation of a favorable climate to integration, that can increase people’s willingness to collaborate and think about the chain as a whole:

“(…) everyone is opened and willing to integrate – what is lacking is time and discipline” R1

“(…) I see a great desire of everyone to get everything right. The values sharing is clear. Here we have a full commitment of all areas – values are both clear and well disseminated. We also have a sense of teamwork and cooperation and a huge empathy, greater than compared to other companies.” R5
Similarly, some points of the organizational culture may represent a barrier to SCI – for example, the political concern, that may lead people to avoid conflicts and make decisions that are not beneficial to the whole chain. Another cultural aspect is the long-term mindset – when making short-term decisions, SC professionals may harm a department’s results, or it can damage a partnership with a client or a supplier. According to the participants both aspects are important for SCI:

“We have a very political environment and, sometimes, there is a conflict of interest and there is when some of the things get lost…” R1

“We are 100% oriented to execute the short-term strategy and because of that we lose sight of how to structure ourselves and to work thinking about the long-term strategy. And, for me, SCI is more beneficial in the long-term horizon.” R1

“Sometimes we want to enjoy the moment, look good in the picture, not in the movie. And that may harm relationships – sometimes I have to lose in order to my supplier to win, and sometimes is the contrary. In the long run, though, everybody wins.” R4

**Leadership.** Top management role in driving SCI is not a consensus among the participants. It was one of the least mentioned drivers. But the ones that actually see as an important driver, as demonstrated in the quotes bellow, recognizes that leadership integration and an end-to-end vision can help increase SCI, since they have more relational strength and decision-making power to make things happen.

“I think would be a good idea to implement and sponsor a 3 or 6-month job rotation program for managers. It will increase the end-to-end vision. Doing this program with analysts is more difficult, because of the operational skills they carry. But with managers that would be a great opportunity and they have the decision power to increase integration.” R6

“Maybe what is missing is a leadership integration, so they can actually make the departments more connected.” R5
**Strategy & Metrics.** Formulating an effective SCI strategy, a process conducted not only by the top management, but also by all related employees, taking into account their inputs and perceptions, is of great importance. But creating the strategy is not enough. The strategy has to be communicated to the whole company and translated into proper supply chain metrics, that will be actually used to assess the performance of the end-to-end process. Strategy and metrics are major drivers of integration, and this opinion was unanimous among participants. Similarly, conflicting goals and lack of supply chain vision may impede SCI to prosper.

“I believe that leadership could bring the integration subject up more. When integration fails, the subject comes up and leadership demands to increase integration. But when it comes to plan strategically how to do it, there is not much support and discussion. It’s not clear or tangible how to do it (SCI).” R1

“First of all, we must have clarity of our strategy – are we more oriented to product and brand leadership or to be the best retailer partner?” R1

“The design of a collaborative strategic planning is really important. Strategy is designed by the top management and then deployed throughout the company. But we didn’t include the opinions and suggestions of the staff level – we should try to consider their inputs, since they know how things work.” R1

“We need shared metrics – not competing ones. If we have share metrics, we should improve.” R1

“My metrics are not my department’s responsibility. They are in my evaluation assessment, but I have no control over it.” R5

“I believe a crucial factor is that every supply chain function should have the same deliveries, the same metrics, the same direction. If different areas’ efforts impact on the same metrics, of course people will want to work together and have a higher level of integration. We know that, in the end, top management have the same metrics – but that should be the case for every department too.” R3
“I think leadership should be integrated and have a common goal, because today each area has its own metrics and we need to converge on the same targets – that is a success factor.”
R2

**Relationship commitment.** The relationship commitment was brought by the participants as an important driver, especially when they were talking about external integration with partners and customers. A topic in especial, that was reported by more than one participant, is the need to define guidelines about selecting partners and identifying the proper degree of partnership:

> “Another key success factor is defining the organization’s policy regarding our external agents – suppliers and customers - you have to pay attention to this. This is fundamental as well. Look carefully to the external links. Define clearly what are the company's rules and strategies when creating alliances and interacting with these other companies. Knowing the company’s guidelines regarding this matter, the supply chain vision, can be really helpful. What does the company value in its relationship with the supplier? What about with clients? Today everyone treats external relations in a different way, within the same company. Due to the high turnover, if each one comes with a different vision and approach, business for supplier and customers can get very confusing.” R8

> “The thought of having strategic partnerships should be embedded in the whole organization. Also, we should know what our main alliances should be – not everyone is strategical.” R4

> “Getting to know the suppliers and their operations, assessing if they are really ready to start a partnership, conduct training and onboarding sessions, signing long-term agreements to establish trust and guarantee investments – all of this will engage them to improve and increase the service level.” R5

> “The important thing in every relationship is to value the supplier and make it feel part of a bigger strategy, make it feel important to the business.” R7

> “When we really win is when we take care of the relationships. Establishing trust and honoring your promises is of the greatest importance” R9
Structure. The way supply chain functions are organized across the organizational chart it’s a matter of most importance to SC professionals: it can facilitate information sharing, it can help people develop a greater understanding of the processes, it can eliminate bureaucracies and function overlapping. In this particular context, supply chain functions are organized in different departments, which have different hierarchical reports. This design often creates cross purposes and conflicts of interest. Some of the participants that mentioned organizational structure as a success factor, also detailed that it can be an important enabler of productivity, leaving space to more strategical discussions:

“I think the first thing is to have a well-defined structure (talking about key success factors). Having a public organizational chart, which communicates every departments’ leaders, and each area’s demands and scopes of activities that are under each department. You set the interfaces and those responsible for each information and each process. This avoids overlaps and reworks and increases proximity.” R8

“When we know who to turn to (talking about internal integration), is so much easier, communication gets much faster. So, if we have a focal point of each department, if we know whom to talk to, and this person is available to help and get the information we need, we can really productive.” R3

“I believe we need to discuss the subject (of SCI) – more hours thinking strategically, less hours acting operationally. If we reduce operational work, we will be able to discuss more interesting things.” R1

One of the participants came up with an important point of discussion: is departmentalization really harmful to SCI? Considering the size of the company being studied, the complexity of its processes and the amount of information handled, departmentalization may be necessary to keep business working. It’s not fair to compare a startup company’s structure with the one of multinational company, with more than 10.000 employees. This is a point that will be further discussed. The participant’s opinion is reported as follows:

“In fact, there is much to improve so the departments are more integrated, but I believe that it is difficult due to the size of the company. If it does not have a well-defined structure, there can be a lot of functions and responsibilities overlapping, which means everybody
caring about all and nobody taking care of anything. And I think that's why there should be still some boundaries between departments. Differently from a startup company, where there is a flat structure, and everyone does everything and participates in everything, here, if each of us doesn’t perform its tasks, the business may freeze.” R8

Another aspect of workplace organization is a strategy to qualify SC professionals in order to form managers with a more broad view of the supply chain: the job rotation. This is a program that many companies encourages, and it can be really beneficial to SCI in participant’s opinions:

“(…) a good strategy the company adopts is encouraging the job rotation, because you take your knowledge to a different area, you create new links between different areas. This is very helpful, so people get to know each other and the interaction between areas increase.” R8

“I believe the company could encourage a greater job rotation among areas and a greater connection with HR, so we can actually have a corporative people management program. If each area does its own metrics and have a different evaluation process, there can be some misjudgments and the increase of departmentalization.” R5

Supply Chain Orientation. Supply Chain professionals need formal trainings and educational programs. They need to understand the whole strategy and connect different processes in order to deliver the best result to final customer – it requires a holist view of the process. The participants recognized the importance of this mindset in increasing integration:

“Trying to link the end-to-end process is really good. We could further explore, for example, linking the Procurement team with the Marketing and the Sales team. If you understand the whole strategy you can increase employee’s ownership. This is an integration strategy, a way to understand in which direction the company wants you to go.” R6

“SCI is about understanding, training, explaining, asking, carry an in-depth analysis of your stakeholder’s process, so you know how your actions and decisions affect them. Having a holistic view of the supply chain is extremely important.” R4
**Technology.** The results from the interview’s analysis demonstrate that technology wasn’t mentioned by most of participants. For those participants that mentioned, technology may, at the same, be an enabler and an example of good practice:

“We have a system to communicate with our suppliers – it gives visibility of raw material orders from the moment the production plan is plugged into our ERP. It ensures an online communication tool with supplier – it’s a really good and agile” R4

“Technology is helping to connect people from different units, different countries, enabling information and knowledge share. This is really helpful considering the size of the company and the distance between units and factories.” R7

**Internal integration as a driver of External integration.** The fact that internal integration can be an important antecedent of external integration is well described in the literature, including the maturity framework being used as reference. From the interviews, it was evidenced that this natural order of progress is also perceived by some of the participants:

“First of all, we start with internal integration and, then, we should move to external integration, thinking about how to conduct collaborative planning or increase the understanding about the clients’ needs.” R1

“Internal integration and the openness of the Procurement team work collaboratively with other departments was really helpful to engage suppliers in the new project.” R3

“We are a very connected company – but sometimes we miss this link. And then, I disseminate the wrong information to the carriers, due to the lack of the accurate information.” R5

“Because we have two types of sales (direct and marketplace), if we are not integrated, retailers can take advantage and try to get a better price that may harm one of the business results” R9

**4.3 Good practices in place**

During the interviews, participants, when describing integration, were able to report several good examples of how integration is happening throughout the organization. Even though most
people classified the company as a Growing Commitment, good practices regarding integrating suppliers and customers were also reported. All the good practices were classified inside a category, as explained before, and the results are displayed in Table 10.

Table 10: Good practices related to SCI

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Good practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Routine</td>
<td>Practices used in daily routine management</td>
<td>• Cross-functional meetings (Logistics and Procurement teams, Planning and Sales)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Regular visits on supplier’s plant</td>
</tr>
<tr>
<td>Information</td>
<td>Information sharing practices among departments</td>
<td>• Review of client’s forecast</td>
</tr>
<tr>
<td>sharing</td>
<td>and external partners</td>
<td>• Long-term volume sharing for carriers</td>
</tr>
<tr>
<td>Process</td>
<td>Group of functional activities, characterized by</td>
<td>• New Product Development and Launch process</td>
</tr>
<tr>
<td></td>
<td>a step-by-step approach</td>
<td>• S&amp;OP Process</td>
</tr>
<tr>
<td>Technology</td>
<td>Investments on special software and system</td>
<td>• ERP system</td>
</tr>
<tr>
<td></td>
<td>infrastructure</td>
<td>• Google platform</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Online portal to communicate with suppliers</td>
</tr>
<tr>
<td>Special programs</td>
<td>Special events or programs that represents small</td>
<td>• Sales Annual Meeting</td>
</tr>
<tr>
<td></td>
<td>efforts towards integration</td>
<td>• Open opportunities to visit customers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trainee and Internship programs focused on continuous improvement</td>
</tr>
</tbody>
</table>

The attention could be drawn to two of the practices:

- New Product Development and Launch: in this process, every supply chain function has a representative, ensuring that all decisions will be made considering the optimal flow from suppliers to customers. During a specific project, integration events are organized when the decisions are made considering the inputs from the whole company and guaranteeing the dissemination of the product drive and the necessary results;

- Recently, the company organized a special program for all employees to get closer to the final customer and understand how their activities deliver value. Thus, it was able to visit a call center, to deliver a product together with the carrier or to visit the customer’s house during a technical repair. This is a strategy to engage employees and instill them to think how they can improve customer service.
It should be emphasized that most of the good practices reported by the participants, and the ones in a more mature stage, are used to enhance internal integration. The practices used to integrate with external partners (for example, the portal to communicate with suppliers or the review of client’s forecast) are not used with the same discipline, and still have opportunities to improve, in order to happen in a more automatic way.

These good practices may be small steps, but they represent efforts being taken towards Supply Chain Integration.

5. DISCUSSION

From the results described previously, it can be stated, above all, that SCI is a reality in the company: SC professionals are aware of what is SCI, its importance and the benefits it can provide; they are able to describe the factors that act as enablers and as inhibitors of integration, and there is a pattern across the different participants’ opinions; they are able to provide real examples of good integration practices and SCI pilots, that are leading the company from the current state to the “Total Commitment” stage.

Thus, to summarize in one sentence: this particular company is dealing with the challenge of SCI in a non-systematically way. With the contribution of the participants description and the workplace observation, it’s clear that the company is struggling to increase integration, and the tactical team has an important participation in this effort. All of the participants are trying, somehow, to help the company achieve better results. However, there is no consensus about the current SCI strategy – and apparently there is no specific strategy at all – and how to move from the current state to more advanced stages.

It's important to notice, though, that the company SCI level has been evolving during the years and the participants have witnessed this progress. From their descriptions, it’s possible to highlight some of the achievements and lessons learned:

- Recent processes were designed in a way to increase collaborative working and even force internal supply chain integration – as examples are the S&OP and New Product Development and Launch processes. These processes have a strong support from leadership and a high level of discipline of all the employees involved.
• The company has made significant technology investments that support SCI: they have the latest version of a renowned ERP software; they have an internal platform of mailing, that allows real-time, collaborative working and connectivity, even with other countries. Along with that, major investments were made in special projects with famous consultancies – during which areas got together to discuss better processes design, better organizational structure, how to deliver better supply chain results.

• There is also a concern with global integration and special programs were organized to increase the degree of global connection: one for Research & Development, for global product design alignment, one for the Procurement Team, to review the organizational structure, and one to share and standardize Manufacturing practices.

• Crisis and difficult moments can make integration more relevant. In recent years, political and economic crisis has led the company’s departments and leadership to work closely, in order to deliver best results. Integration played an important role to map opportunities, that lead to increased revenue and reduced supply chain costs.

Of course, there is a long path towards a complete SCI strategy, if ever possible to achieve such a stage. And, in the following years, the company should put more effort to consolidate the results achieved so far, creating, implementing and communicating a robust plan to stabilize and strengthen internal integration. Simultaneously, the company need to put more energy into external relationships, establishing strategic partnerships to build a competitive and strong supply chain network.

5.1 Recommendations to set up a SCI strategy

Reflecting on the concepts presented in the literature review, the findings of the field research, linking the conditions reported as key success factors for SCI with the improvements suggested by the participants, it was possible to draw some recommendations for practitioners that are in the path towards improving Supply Chain integration.

As already described in the literature review, caring for the relationships and for people dimension is crucial to SCM. And this was further confirmed during this empirical research. The factors pointed as most important to the success of SCI comes down to engaging people to achieve the company’s vision. People need to feel important (relationship commitment), they need to be
informed (communication) and they need to know where they are going and how they are going to get there (strategy & metrics). These factors are the foundation for a robust SCI strategy. Technology, supply chain orientation, culture, leadership, structure they are secondary factors, that enable the establishment of a more favorable workplace.

**Prescription 1:** A commitment to relationships, an efficient communication system, a robust and clear strategy and associated evaluation metrics are the foundation for SCI.

If dealing with people and relationships are a focal point of the SCI strategy, Commercial and Operational top management may not have the expertise and the social skills to deal with SCM on their own. They may need the HR department help, both when creating and implementing the strategy. HR practices can help managers understand people’s needs and motivations, people’s skills and different models of organizational structure. As stated by Huo et al. (2016), HR practices are critical to the development of human capital. Additionally, as a corporative department, the connection with HR may help to deploy the strategy in a standardized way for the whole company.

**Prescription 2:** In order to SCI to prosper, the strategy should be designed and executed together with the HR department.

One of the main complaints of this research’s participants is the lack of direction and a lack of a clear company-wide strategy of SCI. It creates confusion, it harms productivity and discourages professionals. Companies, when developing the SCI strategy, should connect with the main business strategy. People should understand how SCI helps to deliver the main goal. It can increase engagement and ownership of SC professionals. Additionally, this strategy should be reviewed regularly – if a company strategy is to have product leadership, integration efforts have to be directed at the process of developing new products; if a company change its focus to supply chain efficiency, distribution processes would be a priority.

**Prescription 3:** SCI strategy should be connected to the business strategy and be reviewed periodically.
Internal integration is an antecedent of external integration – and that is a necessary condition for both companies in the link. If internally a company lacks a clear SC vision, doesn’t have a good information sharing level and it lacks a positive attitude towards integration, the relationship will hardly prosper, day-to-day operations will harm the partnership. This particular finding was previously tested, in a quantitative survey, by Zhao et al., (2011), which reached the same conclusion: companies must, first, improve their internal systems and processes in order to achieve effective integration with customers or suppliers.

**Prescription 4:** The level of external integration depends on the level of internal integration of both companies.

External integration, different from internal integration, in the company being studied, it depends on the attitudes and characteristics of each employee. Thus, today, the same supplier may have a strong partnership with the buyer in the Procurement Team, but with the Operational Team the relationship is limited to transactional issues – day-to-day problem solving and information sharing. This situation creates confusion and it demonstrates a lack of alignment. Thus, tools to help select the partners where integration efforts will be directed to and guidelines on how to conduct these partnerships can be very helpful and productive.

**Prescription 5:** For companies seeking to increase external integration, setting up a strategy to deal with its external relationships is essential and depends on setting up guidelines and tools to help deal with customers and suppliers.

6. **CONCLUSIONS**

Supply Chain integration is no longer a trend or a buzz word. SC professionals clearly see the benefits it may bring to business and, although non-systemically and yet limited to some pilot projects, they are putting energy into it and demanding companies to structure themselves to expand the implementation.

In the context that was studied, integration can be even more important. Retailers are demanding industries to be more responsive – in this dynamic business environment, industries
are regularly reviewing share distribution, volume forecasts and price strategy. If this company’s direct supply chain is not integrated, if information flows are not faster and online, if internal functions are not connected and work at cross purposes and if suppliers and customers’ inputs are not considered in the strategy - it will be hard to gain competitive advantage.

During the research, the choice by interviewing only analysts, coordinators and managers allowed to understand if the SCI strategy has descended to the operational level and is embedded in the organizational culture. The conclusion is that the strategy is partially embedded – and it is illustrated by the final classification as Growing Commitment. There is still work to be done, although a clear progress is reported unanimously.

Regarding the factors that drive integration, it was possible to notice that there is a high level of connection among them. Despite the fact that some of them were mentioned more frequently, it would be hard, if not impossible, to isolate them and conclude which of them is the most important. This is an important evidence of the fact that SCI is indeed a complex subject. And this is a sign that there is still room for improvement and for both academia and organizations to further explore it, developing tools, strategies and practices that help to deal with this complexity.

This particular research makes a small step in this direction. For academics, this research tried to conduct a different methodological approach to study SCI. For practitioners, it provides some guidance on how to effectively increase SCI, according to other SC professionals’ perspectives and experiences, and the good practices reported.

7. LIMITATIONS AND FUTURE RESEARCH

As it has its contributions, this study has also its limitations. One of the limitations refers to the generalizability of this study’s conclusions and prescriptions. This is a common issue related to qualitative research, and it can be enhanced by the fact that this is a single-case study, that analyzed a single context. This can be further explored in future research, where a quantitative research can be conducted to validate the prescriptions with a larger base of SC professionals, from different contexts and different hierarchy levels.

The fact that the author is part of the company studied and involved in the Supply Chain’s activities analyzed can also be a limitation of this work, including bias towards the conclusions taken about the company diagnosis. This limitation was recognized from the beginning and the
evidence taken from the interview transcripts was a strategy to minimize this bias and guarantee the validity of the findings. Nevertheless, some bias still remains.

Another limitation refers to the classification of the company according to the maturity level of Jin et al (2013). It surely provides an initial guidance, but it depends on a high level of subjectivity. Future research could be done in order to further develop the model, including, as a suggestion, the drivers presented in this study as metrics, to measure integration in a more objective way.

Finally, there were some important discussion about organizational structure and relationship management that need to be explored in higher detail. What is the best organizational design to enhance integration? Is this design different according to the size of the company and the economy sector? How can companies manage the different kinds of relationships?

8. REFERENCES


Seidman, I. (2006). *Interviewing as qualitative research: a guide for researchers in education and


APPENDIX

INTERVIEW PROTOCOL

General Questions

1. What department do you work? Could you briefly explain your job scope?
2. What other departments do you interact with while executing your activities?
3. What about external partners? Do you have any interactions with them?

Strategical Vision of Integration

4. Do you think integration is embedded in company's strategy? How?
5. In your opinion, what are the main benefits of supply chain integration?

Internal Integration

6. How would you describe cross-functional integration inside your company?
7. Has there been any leadership effort to foster a positive attitude between the departments?
8. Can you give me a good example of process or project where integration is effective?
9. In your opinion, what are the most important factors to increase cross-functional integration?
10. What are the main barriers you had to overcome in your integration efforts?

External integration with key suppliers

11. How would you describe integration with key suppliers in your company?
12. In your opinion, what is the company's positioning about information sharing about forecasts, strategy and production plans with key suppliers?
13. Can you give me a few examples of integrative mechanisms used with key suppliers?
14. How often do you talk with key suppliers? What is the reason (mainly reactive or proactive)?

15. What are the most success factors to increase integration with key suppliers?

**External integration with key customers**

16. How would you describe integration with key customers in your company?

17. Are you aware of any initiative to integrate key client’s requirements in the company’s strategic plan?

18. Can you give me a few examples of integrative mechanisms used with key customers?

19. What are the most important keys to alliance success?

20. What are the most success factors to increase integration with key customers?

**Wrap-up**

21. Taking into consideration all the points discussed during our interview, how would you classify the company’s commitment to SCI? For that, use the four stages presented by Jin et al. (2013): Low Collaboration Commitment, Growing Commitment, Major Commitment, and Full Commitment (explain the maturity framework).