

**COLLABORATION AND INTEGRATION OF BUSINESS PROCESSES IN THE
SUPPLY CHAIN: PROPOSITION OF A CONCEPTUAL MODEL**

**COLABORAÇÃO E INTEGRAÇÃO DOS PROCESSOS DE NEGÓCIO NA
CADEIA DE SUPRIMENTOS: PROPOSIÇÃO DE UM MODELO CONCEITUAL**

**COLABORACIÓN E INTEGRACIÓN DE PROCESOS DE NEGOCIO EN LA
CADENA DE SUMINISTRO: PROPUESTA DE UN MODELO CONCEPTUAL**

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ABSTRACT

The growing complexity of supply chains has increased the need to understand how collaboration and business process integration interrelate to generate value and competitiveness. The literature shows significant progress in defining key processes and collaboration constructs, but studies that analyze the influence of these elements in an integrated manner are still scarce. This article aims to propose a conceptual model that explains how collaboration can positively affect the integration of business processes in the supply chain. The research was developed through a systematic literature review, encompassing classic models (GSCF, SCOR, Handfield & Nichols, Srivastava, and Melnyk) and recent contributions on interorganizational collaboration. As a result, eight fundamental business processes were identified (customer relationships, customer service, demand, orders, manufacturing, suppliers, product development, and returns) and four constructs that precede collaboration (internal alignment, partner trust, collaborative culture, and partnership orientation). These elements were organized into a conceptual model supported by five hypotheses that demonstrate how collaboration enhances process integration. The study's main contribution is to offer a robust theoretical framework that can guide future empirical research using quantitative methods (SEM, PLS) and support managers in implementing more effective collaborative practices. It concludes that understanding the relationship between collaboration and integration is essential to strengthening the resilience and competitiveness of supply chains, especially in a scenario marked by digital transformations, sustainability, and complex global dynamics.

Keywords: Supply Chain. Collaboration. Process Integration. Conceptual Model. Resilience.

RESUMO

A crescente complexidade das cadeias de suprimentos tem ampliado a necessidade de compreender como colaboração e integração de processos de negócio se relacionam para gerar valor e competitividade. A literatura mostra avanços importantes na definição de processos-chave e de construtos de colaboração, mas ainda são escassos os estudos que analisam de forma integrada a influência desses elementos. Este artigo tem como objetivo propor um modelo conceitual que explique como a colaboração pode afetar positivamente a integração dos processos de negócio na cadeia de suprimentos. A pesquisa foi desenvolvida

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por meio de uma revisão sistemática da literatura, contemplando modelos clássicos (GSCF, SCOR, Handfield & Nichols, Srivastava e Melnyk) e contribuições recentes sobre colaboração interorganizacional. Como resultados, foram identificados oito processos de negócio fundamentais (relacionamento com clientes, serviço ao cliente, demanda, pedidos, manufatura, fornecedores, desenvolvimento de produtos e devoluções) e quatro construtos antecedentes à colaboração (alinhamento interno, confiança no parceiro, cultura colaborativa e orientação para parceria). Esses elementos foram organizados em um modelo conceitual sustentado por cinco hipóteses que evidenciam como a colaboração potencializa a integração dos processos. A principal contribuição do estudo é oferecer uma estrutura teórica robusta, que pode orientar futuras pesquisas empíricas com métodos quantitativos (SEM, PLS) e apoiar gestores na implementação de práticas colaborativas mais eficazes. Conclui-se que compreender a relação entre colaboração e integração é essencial para fortalecer a resiliência e a competitividade das cadeias de suprimentos, sobretudo em um cenário marcado por transformações digitais, sustentabilidade e dinâmicas globais complexas.

Palavras-chave: Cadeia de Suprimentos. Colaboração. Integração de Processos. Modelo Conceitual. Resiliência.

RESUMEN

La creciente complejidad de las cadenas de suministro ha incrementado la necesidad de comprender cómo la colaboración y la integración de procesos de negocio se interrelacionan para generar valor y competitividad. La literatura muestra avances significativos en la definición de procesos clave y constructos de colaboración, pero los estudios que analizan la influencia de estos elementos de forma integrada aún son escasos. Este artículo busca proponer un modelo conceptual que explique cómo la colaboración puede afectar positivamente la integración de los procesos de negocio en la cadena de suministro. La investigación se desarrolló mediante una revisión sistemática de la literatura, que abarca modelos clásicos (GSCF, SCOR, Handfield & Nichols, Srivastava y Melnyk) y contribuciones recientes sobre colaboración interorganizacional. Como resultado, se identificaron ocho procesos de negocio fundamentales (relaciones con los clientes, servicio al cliente, demanda, pedidos, fabricación, proveedores, desarrollo de productos y devoluciones) y cuatro constructos que preceden a la colaboración (alineación interna, confianza en los socios, cultura colaborativa y orientación hacia la colaboración). Estos elementos se organizaron en un modelo conceptual sustentado en cinco hipótesis que demuestran cómo la colaboración mejora la integración de procesos. La principal contribución del estudio es ofrecer un marco teórico sólido que pueda guiar la investigación empírica futura mediante métodos cuantitativos (SEM, PLS) y apoyar a los gerentes en la implementación de prácticas colaborativas más efectivas. Se concluye que comprender la relación entre colaboración e integración es esencial para fortalecer la resiliencia y la competitividad de las cadenas de suministro, especialmente en un escenario marcado por las transformaciones digitales, la sostenibilidad y las complejas dinámicas globales.

Palabras clave: Cadena de Suministro. Colaboración. Integración de Procesos. Modelo Conceptual. Resiliencia.

1 INTRODUCTION

One of the main trends in the updated within organizations has been the change in business performance from functional structures to process structures (LAMBERT, 2008). Therefore, in the supply chain, the production of a product or service is possible by the chaining and connection of one or more processes internally and externally (DE CASTRO *et al.*, 2009). In these interconnections, the integration of processes becomes complex, since it involves the connection between different organizations, with specific cultures, at different stages of technological development and with their own management methods, thus generating the need for great synergy and collaboration between them (LAMBERT and COOPER, 2000; CROXTON *et al.*, 2001; LAMBERT and KNEMEYER, 2004; HANDFIELD and NICHOLS, 2004).

In the literature, there are several authors who have emphasized the importance of both collaboration and integration of business processes to improve the efficiency of supply chain management, among them are Lambert (2008); Bowersox *et al.* (2008); Kumar and Nath Banerjee (2014); Handfield and Nichols (2004); Lambert and Cooper (2000); Croxton *et al.* (2001), however, there are still no studies that propose to understand the relationship between these two themes.

Therefore, the main objective of this work is to propose a conceptual model that can explain how collaboration can positively affect the integration of business processes in the supply chain. In this way, the main factors of this relationship are identified through a bibliographic research of influential works in the area, then hypotheses of the model and the schematic representation that shows how the themes are related are built.

To this end, in addition to this brief introduction, the article presents in "item 2" a review of the business processes in the supply chain, where the main elements related to the subject are presented. Then in "item 3" is a review of collaboration in the supply chain. In "item 4" the propositions on the effect of collaboration on the integration of business processes are presented. And finally, in the last item, the conclusions of the research are presented, along with suggestions for future work on the theme of the article.

2 BUSINESS PROCESSES IN THE SUPPLY CHAIN

In the literature, five supply chain management models were found that have as a key component the integration of processes based on activities and tasks that must be aligned with the channel strategies, they are: (1) the GSCF model developed by the Global Supply

Chain Forum; (2) the SCOR-model, or Supply-Chain operations reference-model developed by the SCC or Supply-Chain Council; (3) the approach of Handfield and Nichols (2002); (4) the approach of Srivastava *et al.* (1999); and (5) the approach of Melnyk *et al.* (2000). The main characteristics of each model mentioned are presented below.

(1) The GSCF defines Supply Chain Management (*SCM - Supply Chain Management*) as the integration of key business processes to serve the end user (LAMBERT, 2008). In this sense, the success of SCM requires a shift from managing individual functions to integrating key activities and processes in the supply chain (LAMBERT and COOPER, 2000). In addition, according to Croxton *et al.* (2001), the main business processes defined by the members of the *Global Supply Chain Forum* are: i) customer relationship management; ii) the management of customer service; iii) demand management; iv) the fulfillment of requests; v) the management of the manufacturing flow; vi) the management of the relationship with suppliers; vii) product development; and viii) the management of returns.

According to the GSCF model, the management of partner companies in the supply chain must consider these eight processes (LAMBERT, 2008). Each of the eight processes is cross-functional and cross-organizational. At the same time, according to Lambert and Cooper (2000), the eight key processes run through the entire supply chain through companies and within the functional silos in each company. Functional silos include marketing, research and development, finance, production, purchasing, and logistics. The activities in these processes are located inside these functional silos.

(2) SCOR is a method that makes use of benchmarking and evaluations to improve supply chain performance. This is a cross-functional framework template that contains the definitions of process standards, terminologies, and metrics integrated into supply chain processes, comparing them to best practices. The model was developed to help organizations learn about internal and external processes in their segment of operation (STEWART, 1997). According to Bornia and Lorandi (2016), currently the SCOR model defines five key processes, which are: i) planning; ii) the supply; iii) manufacturing; iv) delivery; and v) the return.

The main objective of the SCOR model is to improve the alignment between the market and the strategic reaction of the supply chain, using indicators that enable the management of these five processes, in the constant search for superior efficiency of the supply chain (KIECKBUSCH, 2010).

(3) The approach of Handfield and Nichols (2002) focuses on business processes as a way to integrate actors along the supply chain, however, Santos (2008) states that the authors do not clearly define which are the main business processes that should be considered in this integration. In view of this, Bowersox *et al.* (2008) complement the model by defining eight business processes that should be considered for Supply Chain Management by the approach of Handfield and Nichols (2002).

The business processes defined were: i) demand planning and response capacity; ii) customer relationship management; iii) the fulfillment of the request and provision of the service; iv) the launch and development of products and services; v) the customization of manufacturing; vi) the management of the relationship with suppliers; vii) life cycle support; and viii) reverse logistics (BOWERSOX *et al.*, 2008).

According to Handfield and Nichols (2002), the supply chain must be a true "value system". In addition, the value results from the synergy between the organizations that make up the chain in relation to the flows of information, product, service, capital and knowledge.

(4) Srivastava *et al.* (1999) They seek in their work the identification of business processes that create value for customers and bring financial return to shareholders. The objective of the authors is to study the interferences of the marketing function in these business processes. For the authors, value creation occurs through activities such as the development of new solutions or the renewal of existing solutions, in addition, another factor that enhances this creation of value to the customer is the increase in collaboration between organizations, especially through marketing channels and customer service.

These activities are performed by three business processes, which are: i) the product development process; ii) the supply chain management process; and iii) the relationship process (collaboration) with the client.

(5) The approach of Melnyk *et al.* (2000) present eight essential business processes for Supply Chain Management, which are: i) product development; ii) the development of the process; iii) the monitoring process; (iv) the capacity management process; v) the planning process; vi) the acquisition and supply process; vii) the manufacturing process; and viii) the delivery process.

For the authors, their supply chain analysis model is concerned with understanding, explaining, predicting and changing the organizational effects related to the integration of companies and their business processes along the chain, thus ensuring the generation of

value for end customers. In other words, the emphasis of this approach is the exercise on Supply Chain Management, through collaboration.

Supply Chain Management boils down to understanding that managing the supply chain is managing the business processes that are involved and that are integrated between the organizations that make it up. In this sense, the models presented organize and guide a form of supply chain management based on business processes and their activities. In view of the models and approaches presented and taking into account other authors who comment on the importance of business processes for Supply Chain Management, Table 1 presents the business processes that are considered in the research, with a brief description and the authors who address the respective process in SCM.

The choice of these business processes was due to two important reasons, the first is related to the use of supply chain analysis models in various approaches, among them, are those mentioned in this work and the second is related to the application and validation carried out by the members of the *Global Supply Chain Forum*, based on a comprehensive research that lasted more than six years and involved 15 types of industries and nine different supply chains, with more than 90 in-depth interviews, which enabled several experts in the field to discuss, analyze and define the main business processes that should be considered in the supply chain.

Table 1

Main business processes used in Supply Chain integration

Business Process	Description	Authors
Customer relationship management	It is related to the structure of the relationship with customers. It seeks to raise customer needs and reduce demand variation and activities that do not add value to customers in the supply chain.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999); Melnyk <i>et al.</i> (2000)
Customer service management	It is the process that shows the face of the company to the customer, providing them with real-time information, such as shipping date and availability of products with the company's functional areas such as manufacturing and logistics.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999)
Demand management	It is about managing demand and inventories in an integrated way in all key links of the supply chain.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002);

		Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999); Melnyk <i>et al.</i> (2000)
Order fulfillment	It provides the fulfillment of the order in the most effective way possible, seeking to meet the growing needs of customers in several dimensions (quantity, deadline and quality and others).	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999); Melnyk <i>et al.</i> (2000)
Manufacturing flow management	Manufacturing needs to be more flexible and be able to respond quickly to demand.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Melnyk <i>et al.</i> (2000)
Supplier relationship management	It defines how the company interacts with its suppliers.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999); Melnyk <i>et al.</i> (2000)
Product development management	It deals with the joint work between customers and suppliers for the most efficient product development.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999); Melnyk <i>et al.</i> (2000)
Returns management	It is responsible for the destination of the products returned by customers, as well as managing the flow of materials.	Lambert and Cooper (2000); Croxton <i>et al.</i> (2001); Lambert (2008); Stewart (1997); Handfield and Nichols (2002); Bowersox <i>et al.</i> (2008); Srivastava <i>et al.</i> (1999)

Source: developed by the author.

From this brief discussion regarding the business processes that must be integrated between organizations in a supply chain, it is possible to state, according to the opinion of the authors of this research, that Table 1 presents the view of important authors who write about Supply Chain Management and that the processes contained in Table 1 are relevant, therefore, they will be used as constructs of the conceptual model.

3 SUPPLY CHAIN COLLABORATION

Over the past few years, the core strategy of Supply Chain Management has shifted from a competitive view to a collaborative view BOWERSOX *et al.* (2008). At SCM, collaboration can be an alternative for the development of value and innovation (DE MATTOS and LAURINDO, 2016), and collaboration enhances the research and development of new products and services, as well as enables the integration of processes between companies (BUENO, 2012). In addition, according to Lee; Padmanabhan and Whang (2004), collaboration helps to reduce the bullwhip effect – in which there is a distortion of demand

and a tendency for this variation to spread as it moves upstream, increasing business synergy and quality, offering flexibility and increasing joint innovation (CAO and ZHANG, 2011).

Towards Ramanathan and Gunasekaran (2014), the result of collaboration within the supply chain is cumulative. Future collaborations are significantly influenced by the level of current collaborations within the chain. Therefore, if the level of collaboration is relatively low, even if there are improvements in this practice along the supply chain, the integration of business processes between the partners in the chain will be affected (FLYNN *et al.*, 2010).

Organizations that are able to engage heavily in collaboration can achieve improvements in operational and relational outcomes, which will also lead to efficiency improvements in integrating processes with their partners (BAIHAQI and SOHAL, 2013).

Likewise, understanding your partner in the supply chain helps to increase the level of collaboration, generating trust, credibility and effectiveness in the relationship between organizations, also motivating the improvement of business results, such as: cost reduction; increased quality; Efficiency in customer service, reduction of cycle time, increase of value for the customer (ZACHARIA *et al.*, 2009).

Based on the studies found in the literature on collaboration in the supply chain, twenty factors were identified that deal with the components of collaboration (constructs), these are presented in Table 2, understood as those that are part of the nature of collaboration, being characterized as: i) elements preceding collaboration; and ii) resulting from collaboration.

i) Antecedent elements – as their name suggests, are the elements prior to the collaboration itself, that is, the factors that generate collaboration in the supply chain (MIN *et al.*, 2005). Similarly, Hair *et al.* (2009) state that the antecedent elements are defined as the predictor constructs, in this case, of collaboration.

An important point related to the antecedent elements is the construct of trust in the partner, in the literature there is no consensus on how it should be treated, whether as an antecedent or as a resultant. For some authors such as Fawcett *et al.* (2004); Kohli and Jensen (2010) and Falls *et al.* (2013), partner trust is treated as antecedents of supply chain collaboration. However, for Kanda *et al.* (2008) and Zaheer *et al.* (1998), trust in the partner is studied as a resulting element of collaboration. In this research, trust will be considered as an antecedent element of collaboration in the supply chain, as it is understood that first there must be trust and then generate collaboration.

ii) Resulting elements – these are consequences of collaboration, i.e. benefits associated with collaboration that are not likely to be immediately visualized, but generate

potential benefits in the medium and long term (MIN *et al.*, 2005; BARRATT, 2004; FAWCETT *et al.*, 2007; SIMATUPANG and SRIDHARAN, 2005; and KUMAR and NATH BANERJEE, 2014). Therefore, they can only be measured from the moment that the chain already has the practice of collaboration instituted between the partners.

Table 2

Components of collaboration in supply chains

Description of the Element		Authors														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Background	Partner trust (internal and external trust)		X	X			X		X	X				X		
	Organizational culture (collaborative culture)		X					X			X					X
	Internal alignments (personal interactions; internal and external integration)	X		X								X			X	
	Relationship orientation (partnership) - mutuality; Level of collaboration	X	X				X									
	Communication and understanding		X													
	Openness and Honesty		X													
	Selection of partners						X									
	Collaborative agreements	X														
	Joint relationship effort								X							
	Dedicated investments								X							
	Congruence of goals			X												
	Decision Synchronization				X											
Resulting	Information Sharing (exchange of information and sharing of resources)	X	X	X	X	X	X	X	X	X			X			
	Joint planning	X		X		X		X		X						
	Joint Troubleshooting	X				X		X								
	Leverage	X				X										
	Innovative processes				X											
	Incentive alignment				X											
	Collaborative performance				X											
	Performance Measures					X										
1-Min et al. (2005); 2-Barratt (2004); 3-Kohli and Jensen (2010); 4-Simatupang and Sridharan (2005) and (2008); 5-Vivaldini; De Souza and Pires (2007); 6-Doukidis et al. (2007); 7-Kumar and Nath Banerjee (2012); 8-Nyaga; Whipple and Lynch (2010); 9-Akkermans; Bogerd and Van Doremalen (2004); 10-Barney (1986); 11-Droge; Jayaram and Vickery (2004); 12-Horvath (2001); 13-Ireland and Webb (2007); 14-Prieto et al. (2009); 15-Yunus and Tadisina (2010)																

Source: developed by the author.

As the objective of the research is to evaluate how collaboration influences the integration of supply chain business processes, it is essential to measure the elements

preceding collaboration, that is, those that generate the collaborative effect. In this case, after a detailed review of the specialized literature, twelve elements were found prior to the collaboration, in view of the number of possible constructs to be used, a selection of the most relevant elements for the evaluation of collaboration in the supply chain was carried out. For this, only elements that were used in more than one approach (model) were used as a choice factor, thus, the selected elements are: i) trust in the partner; ii) collaborative culture; iii) internal alignment; iv) orientation for partnership. In addition, another important reason that motivated the choice of these factors was their validation, which occurred through the research carried out by Min *et al.* (2005) and Kumar and Banerjee (2014).

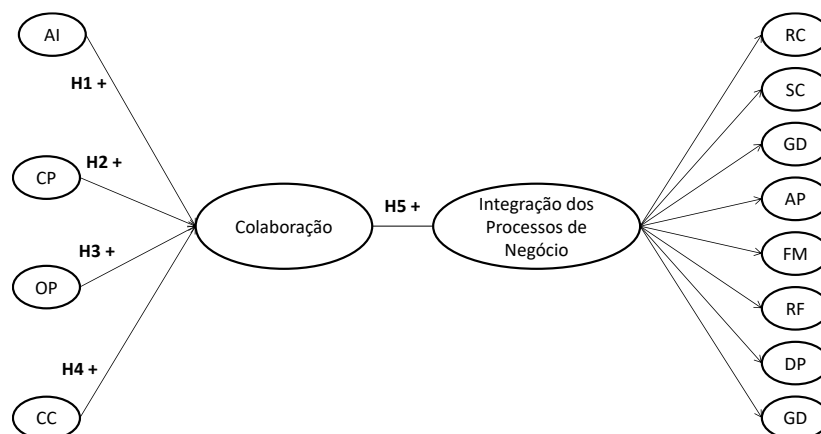
Based on the survey of the main works related to collaboration in the supply chain, it was possible to identify and select the main elements that precede collaboration and that can positively affect collaboration along the supply chain.

4 PROPOSITIONS ON THE INFLUENCE OF COLLABORATION ON THE INTEGRATION OF BUSINESS PROCESSES

From the findings found in the specialized literature and presented in this article, it is possible to build a conceptual model on the relationship between collaboration and the integration of business processes in the supply chain. This model is represented in figure 1, which shows the constructs of the model and the hypotheses of this relationship.

Figure 1

Conceptual model on the influence of collaboration on the integration of business processes in the supply chain



Model constructs: AI – internal alignment; CP – trust in the partner; OP – orientation for partnership; CC – collaborative culture; RC – customer relationship management; SC – customer service management; DG – demand management; AP – fulfillment of the request; FM – manufacturing flow management; RF – supplier relationship management; DP – product development management; and DG – returns management.

Source: prepared by the author.

According to the proposed model, all constructs related to collaboration positively influence the integration of business processes, that is, the greater their presence within organizations, the more efficient the integration of business processes with their partners along the supply chain will be.

Next, the hypotheses that guide the model presented from the constructs related to collaboration in the supply chain are developed, they are: i) internal alignment; ii) trust in the partner; iii) orientation for partnership; iv) collaborative culture; and v) effect of collaboration.

i) **Internal alignment** – this construct in an organization belonging to the supply chain suggests that there is collaboration between sectors and their teams. For Droge, Jayaram and Vickery (2004), inter-sectoral collaboration is determined as the intention of the sectors to act together, sharing information, emphasizing teamwork, presenting a common vision, sharing resources and achieving collective goals. For Baihaqi and Sohal (2013), internal alignment is a predecessor and determining aspect of collaboration in the supply chain. In addition, for the organization to have good results with external collaboration, that is, collaboration with suppliers and customers, it is essential that this practice is instituted internally through internal alignment (BARRATT, 2004). Internal alignment is an ongoing activity of supporting the needs of partners through unification of functions, standardization, simplification of processes, compliance, and structural adaptation (BOWERSOX *et al.*, 2003). In this sense, the first hypothesis of the model can be described as:

4.1 INTERNAL ALIGNMENT POSITIVELY INFLUENCES SUPPLY CHAIN COLLABORATION

ii) **Trust in the partner** -towards Daugherty *et al.* (2006), trust is a fundamental aspect for the necessary changes in a collaborative approach between organizations, because without trust none of the partners will be willing to move away from the usual comfort zone to adopt new responsibilities, such as outsourcing and integrating their business processes with other companies (FAWCETT *et al.*, 2004). Relational aspects, such as trust and credibility in the relationship between companies, are seen as the basis for collaboration in the supply chain (BAIHAQI and SOHAL, 2013). These aspects, while influencing a collaborative effort, are not inherent to a relationship, but develop over time based on experience (MIN *et al.*, 2005). These relational results are higher or lower taking into account the organization's contribution to the collaborative process. As partners share vital information and processes, work to find mutually favorable outcomes and learn together, they

increase the chances of building stronger connections and improving their ability to collaborate (ZACHARIA *et al.*, 2011).

Similarly Akkermans *et al.* (2004) They state that the more partners in the supply chain work together collaboratively, the more trust will be generated between them and the more information will be shared, therefore, it will improve the level of mutual collaboration, which further increases trust. Therefore, mutual trust can provide the basis for collaboration (MIN *et al.*, 2005). In this sense, the second hypothesis of the model can be described as:

4.2 PARTNER TRUST POSITIVELY INFLUENCES SUPPLY CHAIN COLLABORATION

iii) **Partnership orientation** – This construct is defined as an inclination of the organization to carry out cooperation actions with its partners in the supply chain, this can be simplified as the attitude of collaborating. Some research indicates that before collaborating with other actors in the supply chain, it is essential that there is a definition of which partners should be part of this process, seeking to collaborate exclusively with those strategically relevant to the chain (BARRATT, 2004; LAMBERT and KNEMEYER, 2004; MATOPOULOS *et al.*, 2007; MIN *et al.*, 2005). According to authors such as Barratt (2004); Matopoulos *et al.* (2007) and Min *et al.* (2005), there must be a direction towards the development of a relationship and the understanding of the business of each partner in the chain. For instance Lambert and Knemeyer (2004) In their research, they identified companies that separated their partners between high-value and low-value collaboration. This strategic differentiation between business partners is an aspect that characterizes the company's orientation to establish partnerships with other organizations (JAYARAM and PATHAK, 2013), signaling the predisposition or need to develop an external collaborative relationship (MIN *et al.*, 2005). Towards Liker and Choi (2004) Companies can only create the basis for partnership guidance if they know as much about their suppliers and customers as they know about themselves. In this sense, the third hypothesis of the model can be described as:

4.3 PARTNERSHIP ORIENTATION POSITIVELY INFLUENCES SUPPLY CHAIN COLLABORATION

iv) **Collaborative culture** - Collaboration is a relationship-oriented strategy, and its long-term viability depends heavily on the environment in which collaboration is practiced. Culture is an important enabler or even an essential element of collaboration that can make or break the relationship between organizations (FRIEDLI *et al.*, 2006), because working

together and sharing knowledge, skills, risks, communication and processes is difficult without a collaborative culture (FAWCETT *et al.*, 2007; BARRATT, 2004; IRELAND and BRUCE, 2000). The culture in a collaborative network reflects the way companies and people think, work, interact, and behave, and therefore provides a basic protocol for performing all other activities, making collaboration a reality (KUMAR and NATH BANERJEE, 2012). Collaborative culture comprises the attitudes, behavior, and the way individuals and organizations in a collaborative process perceive other partners (KUMAR and NATH BANERJEE, 2012). Both individuals and organizations can experience this culture in terms of the characteristics of individuals and groups, which reflects in openness to communication, knowledge, skill sharing and learning attitude, which, for example, is related to the processes that are integrated between supply chain partners, and the strength of relationships (NYAGA *et al.*, 2010; BARRATT, 2004; ELLINGER, 2000; HADAYA and CASSIVI, 2007). In this sense, the fourth hypothesis of the model can be described as:

4.4 COLLABORATIVE CULTURE POSITIVELY INFLUENCES COLLABORATION IN THE SUPPLY CHAIN

v) **Effect of collaboration** – The effect of collaboration on the integration of business processes is related to the positive effects generated by its previous constructs, i.e., the more significant the internal alignments, trust in partners, the orientation towards partnership and the collaborative culture, the greater the positive effect between collaboration and integration of processes in the supply chain. For example, for Min *et al.* (2005), internal alignment provides additional results, helping to simplify and integrate business processes in basic areas, such as manufacturing flow, demand forecasting, customer service, sales, logistics, and information systems (MIN *et al.*, 2005). In addition, organizations with high levels of internal alignments tend to engage in external collaboration with other actors in the supply chain and thus integrate their business processes. Trust in the partner for Akkermans *et al.* (2004) It generates collaboration that facilitates the sharing of information and resources, thus generating greater ease in the integration of business processes. Regarding the orientation for partnership Liker and Choi (2004) In their research, they state that many companies defend the idea and encourage their managers at all levels to study their partners to understand them and thus facilitate the process of integrating business processes between organizations throughout the supply chain. The collaborative culture is related to the attitudes and behaviors of the organization and its employees and produces a favorable environment

for the integration of business processes (KUMAR and NATH BANERJEE, 2012). In this sense, the fifth hypothesis of the model can be described as:

4.5 COLLABORATION POSITIVELY INFLUENCES THE INTEGRATION OF BUSINESS PROCESSES IN THE SUPPLY CHAIN

From the development of the hypotheses that support the conceptual model on the effect of collaboration on the integration of business processes along the supply chain, it is possible to understand how collaboration and the integration of business processes are interrelated. The construction of the model as well as its hypotheses were defined from an in-depth review of the literature and the consideration of the most important authors in the area, which makes this conceptual model robust and reliable, as it is anchored in results and placements of renowned authors in the area of Supply Chain Management.

5 CONCLUSIONS

The new criteria of competition in the markets have led organizations to develop new capabilities to remain competitive. One of these capabilities is the formation of stronger and more lasting partnerships with its customers and suppliers, in order to establish a chain capable of facing these new criteria and obtaining advantages for all participants in the supply chain.

This research sought to discover how collaboration is related to the integration of business processes in the supply chain. For this, a review of the existing bibliography on the topic of Supply Chain Management related to the integration of business processes and collaboration in the chain was carried out, with the objective of identifying the main and most influential works and enabling the development of a conceptual model that can represent the influence of the constructs presented.

The evidence obtained in the bibliographic research allowed us to verify that the main business processes in the supply chain are: i) customer relationship management; ii) the management of customer service; iii) demand management; iv) the fulfillment of requests; v) the management of the manufacturing flow; vi) the management of the relationship with suppliers; vii) the management of product development; and viii) the management of returns. As well as the constructs that precede collaboration in the supply chain, which are: i) internal alignment; ii) trust in the partner; iii) the orientation towards partnership; and iv) collaborative culture.

From these findings and the conceptual model developed, it is concluded that collaboration, based on the defined constructs, positively influences the integration of business processes in the supply chain, that is, the greater the presence of the collaboration constructs, the more efficient the integration of the processes will be. Thus contributing to increasing competitiveness in the chain and strengthening relationships between partners.

With this, the researchers believe that this research fully achieved its objectives, contributing to the improvement of knowledge on the topics discussed and to the construction of theory about collaboration and integration of processes in supply chains, in addition to providing a conceptual model that can be used in other situations.

As a suggestion for future work, the researchers suggest that the model be tested in practical applications that allow the hypotheses constructed to be tested and the model presented here can be validated.

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