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## Exploring the Role of Third Party Logistic (TPL) Companies as Enablers for Collaborative Systems and Blue Ocean Strategy in Supply Chain Management

Bernardo Andrés Hargous Pretel

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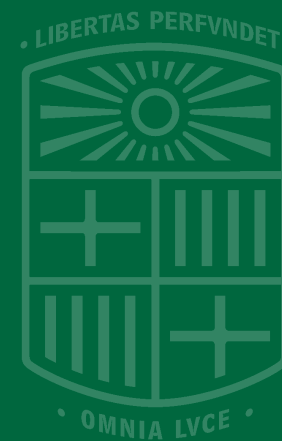


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I thank my children, who during these five years grew up with their father "working on the thesis", and who understood that in addition to his work, their father had this other obligation, and that he did it for them, for a better future.



## **Abstract:**

This doctoral thesis investigates the potential of third-party logistics (TPL) companies as key facilitators of collaborative systems and the implementation of the blue ocean strategy within the realm of supply chain management (SCM). The research is motivated by the need to enhance the effectiveness and efficiency of logistic operations by leveraging the capabilities of TPL companies and exploring new avenues for their involvement in SCM.

The thesis begins with a comprehensive bibliometric study spanning the last two decades, focusing on the research landscape surrounding TPL companies. Additionally, an exhaustive literature review is conducted to understand the possibilities and untapped potential of TPL companies as enablers for collaborative systems among various supply chain stakeholders. This investigation reveals a significant research gap and highlights the opportunity for TPL companies to assume a more prominent role in shaping the future of SCM.

Building upon these findings, the thesis then delves into a detailed analysis of the factors influencing logistic operations through a model comprising eight key dimensions. The research employs partial least squares (PLS) and draws insights from a survey conducted with logistics professionals in Spanish companies. The results support the hypothesis that TPL companies can contribute to improving SCM efficiency, particularly through their active participation in daily supply chain operations. The practical implications underscore the logical and feasible integration of TPL companies as strategic partners, capable of fostering collaborative approaches within supply networks, such as the implementation of Collaborative Planning Forecasting and Replenishment (CPFR) systems.

Moreover, this thesis expands the investigation to examine the relationship between the implementation of the blue ocean strategy and the operation of TPL companies. By conducting a systematic review of quantitative and qualitative studies published in Spanish, English, and Portuguese, the research provides a comprehensive analysis of the existing literature. Although limited in number, the selected research papers indicate the favorable outcomes of employing the blue ocean strategy, allowing companies to transcend direct competition and focus on innovation. However, there is a lack of scientific evidence directly linking outsourced logistics systems with the application of the blue ocean strategy.

In conclusion, this doctoral thesis emphasizes the need for further exploration and substantiation of the benefits associated with implementing the blue ocean strategy in conjunction with TPL operations. The findings provide compelling evidence supporting the advantages of both collaborative systems and the blue ocean strategy for company growth, innovative product development, and expanded customer reach. This research opens up an intriguing path for future investigations, encouraging scholars to delve deeper into this area and contribute to the advancement of knowledge in supply chain management, particularly with regard to the role of TPL companies and the application of the blue ocean strategy.



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# *CHAPTER I*



## **1. Introduction**

Supply chain management (SCM) is a critical function in modern business operations, and its importance has only increased over time. An effective supply chain can lead to increased efficiency, reduced costs, and improved customer satisfaction. Third-party logistics (TPL) companies play a significant role in SCM by offering specialized services such as transportation, warehousing, and inventory management. In recent years, collaboration among supply chain partners has become increasingly essential to achieve supply chain performance objectives. Collaborative Planning, Forecasting, and Replenishment (CPFR) is one such approach that has gained popularity in recent years for improving collaboration in supply chains (Mentzer et al., 2001).

This thesis will investigate the role of TPL companies in facilitating effective SCM and CPFR practices. The thesis will begin with a comprehensive literature review (Fink, 2013) of the existing research on TPL and SCM, including the benefits, challenges, and best practices associated with TPL adoption. The review will also cover the implementation of CPFR practices in supply chains, including the factors that affect the adoption of CPFR, the impact of CPFR on supply chain performance, and the challenges of CPFR implementation (Grieger et al., 2015).

In addition to the literature review, this thesis will employ partial least square (PLS) technique to analyze the relationship between TPL, SCM, and CPFR practices. PLS is a statistical technique used to identify the underlying relationships between variables, and it has proven to be a useful tool for examining the complex interrelationships between TPL, SCM, and CPFR practices (Chin, 1998).

Finally, this thesis will also explore the potential benefits of the blue ocean strategy for TPL companies. The blue ocean strategy is a business framework that focuses on creating new market spaces rather than competing in existing ones. By exploring the potential benefits of the blue ocean strategy for TPL companies, this thesis will provide valuable insights into how TPL companies can differentiate themselves from competitors and achieve long-term success (Mauborgne & Kim, 2004).

In conclusion, this thesis aims to provide a comprehensive understanding of the role of TPL companies in facilitating effective SCM and CPFR practices. Through the use of a literature review, PLS analysis, and exploration of the blue

ocean strategy, this thesis will provide valuable insights for practitioners and researchers in the field of SCM and TPL.

### **1.1. Theoretical Framework: The Role of Third-party logistics companies in Supply chain management and how have been evolved in the last 3 decades**

Third-party logistics (TPL) companies play a significant role in supply chain management. According to Chopra & Meindl (2021), third-party logistics companies are outsourced logistics service providers that perform all or part of a company's logistics functions. These companies provide a wide range of services, including transportation, warehousing, inventory management, and order fulfillment.

Outsourcing logistics activities to TPL companies can provide many benefits to companies. As Chopra & Meindl (2021) note, outsourcing logistics activities can free up a company's resources, both in terms of capital and personnel, so that it can focus on its core competencies, such as product development and marketing. In addition, TPL companies can offer economies of scale and scope that are difficult for individual companies to achieve. As Mangan & Lakhwani (2016) explain, TPL companies are able to leverage economies of scale and scope in areas such as transportation, warehousing, and information technology that can result in cost savings for their clients.

Third-party logistics (TPL) companies play an essential role in supply chain management. As noted by Lambert & Stock (2001), "the growth of third-party logistics has enabled companies to focus on core competencies and outsource non-core activities to achieve higher efficiency, better quality, and improved customer service". TPL companies provide a range of services, including transportation, warehousing, inventory management, and order fulfillment, which help companies streamline their operations and reduce costs.

The importance of TPL companies has increased significantly over the last three decades. According to Bowersox & Closs (1996), "the use of third-party logistics services has grown rapidly in the past decade, and the trend is expected to continue as companies seek to enhance their supply chain performance". The authors note that the increasing complexity of global supply chains and the need



for cost reduction and improved customer service have contributed to the growth of TPL services.

Furthermore, TPL companies have evolved to meet the changing needs of the supply chain. As pointed out by Langley (2019), "TPL providers have expanded their service offerings, invested in technology, and embraced digitalization to enhance their capabilities and provide more value to their clients". For example, many TPL companies now offer value-added services such as packaging, labeling, and customization to meet the specific requirements of their clients.

In summary, TPL companies play a crucial role in supply chain management by providing specialized logistics services and enabling companies to focus on their core competencies. The importance of TPL services has increased significantly over the last three decades, and TPL companies have evolved to meet the changing needs of the supply chain.

In order to set the right expectations and set a base ground to analyze the following research, some theoretical concepts are presented.

## **1.2. Conceptual Framework: Supply Chain Management and third party logistic company**

Supply chain management (SCM) is the coordination and management of activities involved in the flow of goods and services from the point of origin to the point of consumption. According to Chopra & Meindl (2021), "Supply chain management encompasses all the activities required to get the right product to the right customer at the right time, while minimizing costs and maximizing profits".

SCM involves a variety of functions, including procurement, production, transportation, storage, and distribution. These activities are interconnected and require collaboration among various stakeholders, including suppliers, manufacturers, distributors, and retailers. The goal of SCM is to optimize the flow of goods and services, reduce costs, and improve efficiency and responsiveness to customer demands.

Effective SCM requires the use of advanced technologies, such as real-time tracking and tracing systems, as well as the development of strong relationships with suppliers and customers. SCM also involves the use of performance

metrics to evaluate the effectiveness of supply chain operations and identify areas for improvement.

In summary, supply chain management is the coordination and management of activities involved in the flow of goods and services from the point of origin to the point of consumption. It involves collaboration among various stakeholders, the use of advanced technologies, and the development of strong relationships with suppliers and customers to optimize the flow of goods and services, reduce costs, and improve efficiency and responsiveness.

On the other hand, a third-party logistics (TPL) provider is a company that provides outsourced logistics services to other companies (Coyle et al., 2022). TPLs offer a range of services that can include transportation, warehousing, distribution, fulfillment, customs brokerage, freight forwarding, and value-added services such as packaging and labeling. By outsourcing these functions to a TPL provider, businesses can focus on their core competencies and leave logistics operations to the experts. These companies act as intermediaries between manufacturers or suppliers and their customers, providing services that help to streamline supply chain operations and reduce costs.

According to Bowersox et al. (2019), the TPL industry has evolved from transaction-based services to a more strategic partnership model that includes end-to-end supply chain management services. This evolution has led to the development of 4PLs, which are companies that provide integrated supply chain solutions that include not only logistics services, but also consulting and technology services.

Third-party logistics (TPL) providers play an important role in supply chain management by offering specialized logistics services that can help businesses optimize their supply chain operations. According to Selviaridis & Spring (2007), "TPL providers can help shippers to reduce transportation costs, improve delivery times, increase product availability, and reduce inventory holding costs".

In addition, TPL providers often have a network of transportation and distribution channels that can help businesses to reach new markets and expand their customer base. According to Langley (2021), "TPL providers have the expertise and resources to optimize logistics operations and enable businesses to scale their operations rapidly and efficiently".

Overall, the importance of a third-party logistics company in supply chain management lies in their ability to offer specialized logistics services, optimize logistics operations, and help businesses to reduce costs, improve delivery times, and expand their market reach.

According to Tariq & Khan (2018), "the performance of TPLs can have a significant impact on the success of SCM by improving the efficiency and effectiveness of logistics operations". In other words, when TPL providers perform well, they can help businesses to optimize their logistics operations and improve the overall performance of their supply chain.

The performance of a TPL provider can be measured in several ways, including on-time delivery, order accuracy, inventory accuracy, and customer satisfaction. When a TPL provider performs well on these metrics, they can help businesses to reduce costs, improve delivery times, and enhance the overall customer experience.

In addition, the performance of a TPL provider can also impact the strategic direction of a business. According to Bowersox et al. (2019), "the choice of a TPL provider and the nature of the relationship with that provider can have significant strategic implications for a company". For example, a TPL provider that specializes in a certain type of logistics service can help a business to enter a new market or expand their operations.

The performance of a third-party logistics provider can have a significant impact on the success of supply chain management. When TPL providers perform well, they can help businesses to optimize their logistics operations, improve customer satisfaction, and enhance their strategic position.

### **1.3. State of Art: Research State of Third Party Logistic in the Supply Chain Management and the view under Blue Ocean Strategy**

The scientific literature about third-party logistics (TPL) companies is well developed, with a substantial number of studies focusing on various aspects of their operations. According to Ngai et al. (2011), "the literature on TPLs has been growing rapidly over the past two decades". This growth can be attributed to the increasing importance of logistics outsourcing and the role that TPLs play in supply chain management.

The literature on TPLs covers a wide range of topics, including their role in logistics operations, the factors that influence their performance, the challenges

they face, and the strategies they use to remain competitive. Many studies have also explored the relationship between TPLs and their clients, as well as the impact of TPLs on supply chain performance.

In recent years, there has been a growing interest in the use of technology and innovation in TPL operations. According to Jia & Zhang (2018), "the latest trends in TPL research include the application of advanced technologies such as big data, Internet of Things (IoT), and cloud computing". These technologies are seen as critical for improving the efficiency and effectiveness of TPL operations, and for enhancing their ability to meet the evolving needs of their clients.

Overall, the scientific literature on third-party logistics companies is extensive and continues to evolve as the industry itself changes and grows.

According to Dejonckheere et al. (2015), "third-party logistics providers (TPLs) have expanded their services in response to changing market conditions and increased competition". This expansion has included the adoption of new technologies, the development of new service offerings, and the expansion of their geographic reach.

Several studies have examined the factors that contribute to the growth and evolution of TPL companies. For example, Ketchen et al. (2014), found that the ability of TPLs to adapt to changing market conditions and customer needs is a key factor in their success. They also found that TPLs that can leverage their expertise in particular industries or regions are more likely to succeed in the market.

Other studies have highlighted the importance of strategic partnerships and alliances in the growth and evolution of TPLs. For example, Frohlich & Westbrook (2001), found that TPLs that establish strategic partnerships with their clients are better positioned to respond to changing customer needs and to achieve long-term growth.

Overall, the research suggests that TPL companies have significant potential for growth and evolution in the market, but that their ability to adapt to changing market conditions and customer needs is critical to their success.

Regarding strategies to apply in the business analysis of third-party logistics companies, according to Ng et al. (2016), "the Blue Ocean strategy can help TPL firms to differentiate themselves from their competitors and create new market spaces". The Blue Ocean strategy is a business strategy that aims to

create uncontested market space and make competition irrelevant by creating new demand and offering unique value propositions.

Several studies have examined the implementation of Blue Ocean strategies in the TPL industry. For example, Yang & Chen (2019) conducted a case study of a TPL company that successfully implemented a Blue Ocean strategy by offering customized logistics solutions to its customers. The company was able to differentiate itself from its competitors and achieve significant growth in the market.

Similarly, Kallio et al., (2018) found that the implementation of a Blue Ocean strategy can help TPL companies to identify new business opportunities and differentiate themselves from their competitors. They also found that the successful implementation of a Blue Ocean strategy requires a strong focus on innovation, customer-centricity, and a willingness to take risks.

Overall, the research suggests that the implementation of Blue Ocean strategies can be a valuable approach for TPL companies looking to differentiate themselves from their competitors and achieve growth in the market.

According to Khan & Qiao (2018), "TPL companies play a critical role in supply chain management by providing specialized logistics services, such as transportation, warehousing, and inventory management". TPL companies can help improve supply chain performance by offering expertise, resources, and technology that can streamline operations and reduce costs.

Several studies have examined the role of TPL companies in supply chain management. For example, Zailani et al., (2018) found that the use of TPL services can significantly improve supply chain performance in terms of cost reduction, service quality, and delivery performance. They also found that TPL companies can help improve supply chain agility, responsiveness, and flexibility.

Similarly, Bolumole et al. (2019) found that the use of TPL services can help small and medium-sized enterprises (SMEs) to overcome resource constraints and improve supply chain performance. They also found that TPL companies can help SMEs to access new markets and expand their customer base.

Overall, the research suggests that TPL companies can be an essential participant for good supply chain management performance, especially for companies that lack the expertise or resources to manage their logistics operations effectively.



## *CHAPTER II*





## 2. Research question and objectives

The focus of this research is to **analyze the role of TPL companies in the performance of SCM and to identify how TPLs can evolve to improve performance in the SCM.** To achieve this objective, the study will conduct a comprehensive literature review to identify the factors that influence the performance of SCM and the role of TPLs in SCM. The literature review will also highlight the current challenges faced by TPLs in the SCM and identify opportunities for improvement.

The study will use a mixed-methods approach based on a thorough literature review, including quantitative and qualitative research methods. The quantitative method will involve analyzing case studies researches to identify the factors that influence SCM performance. The qualitative method will involve a thorough review on the literature to gain a deeper understanding of the challenges and opportunities faced by TPLs in SCM (Glänzel, 2003).

Overall, the study will contribute to the understanding of the role of TPLs in SCM and provide insights into how TPLs can evolve to improve performance in the SCM. The findings of the study will be beneficial to both TPL companies and their clients in enhancing the efficiency and effectiveness of their supply chain operations. The main works reviewed are shown in Table 2.1, leaving a GAP in the literature to focus on the future evolution of the TPL companies to support the development of the SCM.

*Table 2. 1 Literature Review Summary Analysis*

<b>Concept</b>	<b>Reference</b>
The TPL is essential to give a Good Customer Service.	Sahay (2006) Bhatnagar et al. (1999)
The TPL support the warehousing processes of the company.	Baruffaldi, G.; Accorsi, R.; Manzini (2019)
The TPL support the freight processes of the company.	Power et al. (2007)
The TPL support the logistic coordination processes of the company.	Liu, Huo, Liu (2015) Hertz, S.; Alfredsson (2003)

The TPL support the inventory management processes of the company.	Cheong (2004)
The TPL has total system integration with the company ERP.	Mortensen & Lemoine (2008) Sheikh & Rana (2011)
The TPL has knowledge of the company inside operations.	Chen et al. (2011) Mellat-Parast & Spillan (2014)
The TPL contribute with ideas and solutions for the business processes optimization.	Rollins et al. (2011)
The TPL participates in the demand planning forecast of the company.	Min (2013)
The TPL participates in the join demand forecasting with the Customer.	Trentin (2011)
The TPL generates purchase orders for the customer replenishment process.	Graves et al. (2011)
The TPL coordinates follow up meetings and activities within customer, the company and the Warehouse.	Skjoett-Larsen (2000)
The TPL has system integration with customers.	Chow et al. (2007)
The TPL has total visibility of inventory levels, demand forecast and goods movements in the whole chain.	Daugherty et al. (2006) Holcomb et al. (2011) Liu & Kumar (2003) Simatupang et al. (2002)
The TPL participates and contribute in the company logistic strategy.	Bo et al. (2011)
The TPL participates in the logistic relationship and logistic strategy with customers.	Bo et al. (2011)
The TPL participates in the logistic strategy implementation.	Hoi et al. (2006) Stank et al. (1999)
The TPL measures and generates periodic reporting for the logistic operations.	Domingues et al. (2015)

The TPL participates in the negotiation with vendors.	Zhan-feng & Yong (2008)
The TPL administrates the vendor management.	Ali et al. (2014)
Using a TPL benefits the supply chain management of the company	Zacharia et al. (2011)
The TPL delivers value to SCM processes	Power et al. (2007)
VMI improves the delivery and inventory level efficiency in the supply chain	Claassen et al. (2008)
CPFR improves inventory levels, replenishment lead-time and planning	Claassen et al. (2008)
TPL has the know-how to implement CPFR	Vivaldini et al. (2008)
TPL has the resources to implement CPFR	Qureshi et al. (2008) Zacharia et al. (2011)
TPL can offer CPFR methodology to many customers	Vinay et al. (2009)
TPL has staff training capacity for CPFR implementation	Sanches Flores & Primo (2018)
TPL has the technical knowledge and capabilities to a system integration with multiple platforms	Hanus (2013)

\*Source: adapted from (Hargous & Guitart Tarrés, 2022)

From this holistic view of the importance of third party logistic companies in supply chain management, and how the development of the research about those topics have been developed, there are raised 3 main questions from where 3 research work have been developed. Each of these 3 raised questions are responded by one specific research work with the respective objective explained and developed.

Third-party logistics (TPL) companies play an important role in collaborative practices in supply chain management. According to Christopher & Peck (2004), "TPL providers are becoming increasingly important in facilitating supply chain collaboration by providing the logistics expertise and resources necessary to integrate and manage the flow of goods and information across the supply chain".

One way TPL companies participate in collaborative practices is through the use of collaborative planning, forecasting, and replenishment (CPFR) processes. As noted by Hollmann et al. (2015), "TPL providers can support CPFR by sharing their expertise and experience in supply chain management, offering advanced technology platforms, and providing real-time data analytics to support decision-making processes".

Another way that TPL companies participate in collaborative practices is through the implementation of vendor-managed inventory (VMI) programs. According to Handfield et al. (2009), "TPL providers can manage inventory levels and replenishment processes, which can result in improved inventory accuracy and reduced stockouts". By sharing information and working closely with suppliers and customers, TPL companies can help to ensure that inventory levels are optimized, and product availability is improved.

In addition to these collaborative practices, TPL companies can also participate in collaborative transportation management programs (CTM). As noted by Monczka (2019), "TPL providers can assist in the development and implementation of CTM programs, which can lead to improved transportation efficiencies, lower transportation costs, and increased customer service levels".

TPL companies can participate in collaborative practices in supply chain management by providing logistics expertise and resources, supporting CPFR processes, implementing VMI programs, and participating in CTM programs.

Based on the previous statements, the first research question on the present thesis is, **how third party logistic companies participate in collaborative practices in supply chain management.**

TPL companies play a crucial role in facilitating supply chain management by providing specialized logistics services to companies that do not have in-house logistics capabilities. According to Choi & Kim (2021), TPL companies can contribute to developing more effective and efficient logistics operations by leveraging their expertise and resources. By acting as orchestrators of

collaborative systems and implementations, TPL companies can help to create more efficient supply chain networks that benefit all participants.

Collaborative systems refer to the sharing of information, resources, and decision-making responsibilities between different parties in the supply chain. Collaborative implementations, on the other hand, involve joint planning and execution of logistics operations. By taking on the role of orchestrators, TPL companies can facilitate collaboration between different stakeholders and help to streamline logistics operations. As noted by Yang & Chen (2019), "TPL companies have been regarded as an effective solution for coordinating logistics activities among different partners" (p. 5).

Research by Hong & Kim, (2020) has shown that TPL companies can improve supply chain performance by reducing lead times, transportation costs, and inventory levels. By investigating the role of TPL companies as orchestrators of collaborative systems and implementations, this study aims to contribute to a better understanding of how logistics operations and SCM can be improved through collaboration and the involvement of TPL companies.

Collaboration among different stakeholders in the supply chain has become increasingly important in recent years to improve supply chain efficiency and competitiveness. According to Karia & Asif (2021), "collaboration is an essential element for the optimization of supply chain performance". TPL companies, as intermediaries between different parties in the supply chain, are in a unique position to facilitate collaboration and improve supply chain performance.

Several collaborative practices have been identified in the literature, including vendor-managed inventory (VMI), collaborative planning, forecasting, and replenishment (CPFR), and cross-docking. VMI involves the sharing of inventory data between suppliers and customers, with the supplier taking responsibility for maintaining optimal inventory levels at the customer's site (Nasiri et al., 2020). CPFR involves joint planning and forecasting of demand and inventory levels between different stakeholders in the supply chain (Gaur et al., 2021). Cross-docking is a logistics strategy that involves the direct transfer of goods from incoming to outgoing trucks, reducing the need for warehousing and inventory holding (X. Chen et al., 2020).

TPL companies can play a key role in implementing these collaborative practices to improve supply chain efficiency and boost their business in new markets. According to Zou et al. (2020), "TPL companies are expected to play a critical role in the implementation of collaborative logistics and supply chain

management practices due to their neutral and independent position in the supply chain”.

By identifying and evaluating collaborative practices that can be implemented through TPL companies, this study aims to contribute to a better understanding of how TPL companies can improve supply chain efficiency and competitiveness in new markets.

Therefore, the objective to answer the first question is, **based on the published literature, is there any collaborative practice that improves efficiency in the supply chain that can be implemented through the third-party logistics companies to boost their business and rise to the challenge of the new markets?**

Third-party logistics (TPL) companies are important in supply chain operations because they provide expertise, technology, and resources that can help to optimize supply chain processes. As noted by Kusumastuti et al., (2017), the importance of TPL providers lies in their ability to offer specialized logistics services, reduce logistics costs, and provide value-added services that improve overall supply chain performance.

One important role that TPL companies play in supply chain operations is the management of transportation and distribution activities. According to Christopher, (2005), TPL providers can improve transportation and distribution operations through their expertise, scale of operations, and technology platforms. By providing efficient and reliable transportation and distribution services, TPL companies can help to ensure that products are delivered to customers in a timely and cost-effective manner.

Another important role of TPL companies in supply chain operations is inventory management. As noted by Premkumar et al. (2020), "TPL providers can offer inventory management services that include warehousing, order fulfillment, and tracking and tracing capabilities". By managing inventory levels and improving inventory accuracy, TPL companies can help to reduce stockouts, improve product availability, and lower inventory holding costs.

In addition to transportation and inventory management, TPL companies can also provide value-added services that enhance supply chain operations. These services may include packaging, labeling, assembly, and quality control, among others. As noted by C. J. Langley et al. (2018), "TPL providers can offer a wide

range of value-added services that help to improve supply chain performance and reduce costs".

Furthermore, TPL companies are important in supply chain operations because they provide specialized logistics services, reduce logistics costs, and offer value-added services that improve overall supply chain performance. They can help to optimize transportation and distribution activities, manage inventory levels, and provide additional services that enhance supply chain operations.

Taking into account the previous statements, the second research question on the present thesis is, **what is the importance of a third party logistic company in supply chain operations.**

TPL companies are often chosen by companies for their expertise in logistics and supply chain management, which can help to reduce costs and improve efficiency (Prajogo & Sohal, 2016). However, TPL companies can also play a critical role in facilitating horizontal collaboration between different parties in the supply chain. According to Tsiakis et al. (2019), "TPL providers, as third parties that are external to the collaborating partners, can act as facilitators in the development of horizontal collaboration systems".

Horizontal collaboration involves cooperation between companies at the same level of the supply chain, such as between manufacturers or retailers, to share resources and achieve mutual benefits (Gunasekaran et al., 2017). By serving as intermediaries between different parties in the supply chain, TPL companies can facilitate communication, collaboration, and information sharing between companies and enable the development of horizontal collaboration systems (Tsiakis et al., 2019).

By investigating the potential of TPL companies as enablers for horizontal collaboration systems, this research aims to contribute to a better understanding of how TPL companies can provide value beyond their traditional logistics and supply chain management services.

Hargous & Guitart Tarrés (2022) proposed a model that consists of eight factors that affect the performance of a supply chain: coordination, trust, information sharing, supplier involvement, customer involvement, flexibility, quality, and cost. The authors argue that these factors are interdependent and that their interactions can significantly impact the supply chain's performance.

Partial least squares (PLS) is a multivariate statistical technique that can be used to analyze the relationships between multiple variables and identify the underlying factors that drive these relationships (Henseler et al., 2015). By applying PLS to the model proposed by (Hargous & Guitart Tarrés (2022), it is possible to identify the most important factors and their interactions, which can provide valuable insights into how to improve the supply chain's performance.

By analyzing the interaction of the eight factors in the proposed model using PLS technique, this research aims to contribute to a better understanding of the complex relationships between different factors and their impact on the supply chain's performance.

Therefore, the objective to answer the second question is, **to analyze the interaction of the 8 factors in a model applying PLS technique.**

The Blue Ocean strategy is a framework for creating new market spaces that are untapped and uncontested. A third-party logistics (TPL) company can use this strategy to break through in the market by identifying unmet needs of customers and providing unique value propositions that are different from traditional TPL services. According to Mauborgne & Kim (2004), "Blue Ocean strategy is about creating new market space by breaking the value-cost trade-off and pursuing differentiation and low cost simultaneously".

To apply the Blue Ocean strategy, a TPL company can start by identifying key factors that drive demand in the market, such as pricing, service quality, delivery speed, and customization. Then, the company can explore new value propositions that align with these factors and differentiate the company from competitors. For example, a TPL company may focus on providing specialized logistics services that cater to a specific industry or region or develop technology platforms that enable real-time tracking and tracing of shipments (S. Lee & Kim, 2010).

Another key aspect of the Blue Ocean strategy is to reduce costs while increasing value to customers. This can be achieved through innovative process design, automation, and outsourcing. For example, a TPL company may partner with local logistics providers in emerging markets to offer low-cost transportation and warehousing solutions, or leverage technology to optimize route planning and reduce fuel consumption (Y. H. Lee & Yoon, 2014).

In summary, the Blue Ocean strategy offers a framework for TPL companies to break through in the market by identifying unmet needs of customers, creating



unique value propositions, and reducing costs while increasing value. By differentiating from traditional TPL services, a company can tap into new market spaces and gain a competitive advantage (Rhee et al., 2013).

Based on the previous paragraph, the third research question on the present thesis is, **how a third party logistic company can break through in the market using the Blue Ocean strategy.**

The blue ocean strategy is a business strategy that aims to create new markets and make the competition irrelevant by creating a demand for products or services that have not been offered before (Mauborgne & Kim, 2004b). In the context of TPL, implementing the blue ocean strategy could potentially lead to the creation of new services or solutions that meet the needs of customers that have not been addressed before.

By investigating the relationship between implementing the blue ocean strategy and the operation of TPL, this research aims to identify the benefits of this alternative strategy for TPL companies. This can provide valuable insights for TPL companies that are looking for ways to differentiate themselves from their competitors and offer new and innovative solutions to their customers.

There is a growing interest in the application of the blue ocean strategy in various industries, including logistics. However, the extent to which TPL companies have adopted this strategy is not yet clear. By conducting a comprehensive review of the literature on the application of the blue ocean strategy by TPL companies, this research aims to identify the current state of the art, the benefits, the challenges, and the potential opportunities of this strategy in the logistics industry.

Therefore, the objective to answer the third question is, **carry out a review of the literature regarding the blue ocean strategy applied or used by third party logistic companies.**



## *CHAPTER III*



### **3. Third Party Logistic a possible orchestrator of CPFR**

#### **3.1. Abstract**

##### *Purpose*

Third party logistic (TPL) companies contribute to develop more effective and efficient logistic operations. One way to help this development is having a TPL company can be the orchestrator of a collaborative systems and implementations to do the SCM more efficient to the participants.

##### *Design/ methodology/ approach*

A bibliometric study about the main researches of TPL companies from the las 2 decades is presented, and an exhaustive literature review to understand the possibilities of TPL companies as enablers for collaborative systems among the supply chain players.

##### *Findings*

There is a gap in the literature to have a new research line where the TPL companies can be the protagonist of the next level of sophistication and add value in the future SCM.

##### *Originality/ value*

This study reveals a new line for future researches and the opportunity for the TPL companies to gain a major role in the SCM.

### 3.2. Introduction

Supply Chain Management (SCM), as a integration of key business processes in the supply of products, services and information, which add value, from suppliers to the end user, has an important dimension due to its emphasis on communication and cooperation between all parties (among the company or to other companies in the value chain).

The actual research considers that the SCM field of study is quite new and still growing in relevance among other business study fields. This is reflected in the increasing number of papers, research, conferences and new academic careers in said field.

It must be considered that the field of SCM has evolved in a dramatic way since the globalization era, thus the factors of innovation, sustainability, and technology have a significant impact in the development of this area. These changes raise challenges not only to higher education institutions, but also to students, organizations, employees, and third parties like SCM related professional bodies (Sinha et al., 2016), to understand and fill the gap that the differences in society are generating in the SCM field. To be able to meet the upcoming challenges, the SCM industry has had to face them through the usage of strategies as Collaboration practices. The Collaboration in supply chain is understood as the two or more independent companies working jointly to plan and execute supply chain operations with greater success than when acting in isolation. It can occur in many ways and is commonly divided into two main categories (1) vertical, when collaborating with customers, internally (across functions), service providers and with suppliers; and (2) horizontal, between different supply chains when cooperating with competitors and with non-competitors (Barratt, 2004). To sum up, according to Tafuri et al. (2013) horizontal cooperation projects aim to identify and achieve win-win situations among two or more firms operating at the same level of the supply chain, competitors or not, similar or different in terms of size or products. Hence, such a collaboration let companies to reach superior performances in comparison with them without a that kind of strategy. These companies can be manufacturers or suppliers, retailer companies, wholesalers, etc.

#### ***Horizontal Collaborative Practice***

Collaborative Planning, Forecasting, and Replenishment (CPFR), based upon supply chain collaboration standards established by the Voluntary Interindustry Commerce Solutions (VICS) Association, “are information systems that enable partnering firms to integrate their inventory planning,

forecasting and replenishment processes by sharing information, developing joint forecasts and jointly crafting replenishment plans” (Panahifar et al., 2015).

VICS is a worldwide, non-profit organization that focuses on improving product and information flow throughout the supply chain. It is responsible for establishing rules and guidelines for the supply chain management, in general, focusing in inventory reduction, processes efficiency, and collaboration strategies among companies like Collaborative Planning, Forecasting and Replenishment (CPFR®), when customer and supplier decide to work together. Companies around the globe follow their standards and guidelines voluntarily, looking for benefits in their supply chains.

Although conceptually simple, CPFR implementations are complex in practice as they require exchange of large amounts of data for forecasting a wide range of products. They must account for varying promotional activities, involve multiple functional areas from multiple firms, take an extended period of time to implement, and integrate possibly incompatible business processes between CPFR partners (Yao et al., 2013).

Since 1998, when VICS first adopted a set of standards for CPFR information systems, more than 300 companies have engaged in CPFR practices leading to substantial benefits to suppliers, such as Procter and Gamble and Kimberly-Clark and retail chains, such as Wal-Mart and Best Buy (VICS, 2007).

Before those main implementations in big retailers companies, Ireland & Bruce (2000) present the concept of CPFR as the driver to enhance horizontal collaboration between companies, in order to have an evolutionary stage of supply chain transformation.

As Attaran & Attaran in 2007a conclude, collaborative supply chain management practices, especially CPFR, are firmly establishing themselves as the way forward for successful and sustainable business operations. By following CPFR companies can dramatically improve supply chain effectiveness with demand planning, synchronized production scheduling, logistic planning, and new product design. CPFR will force suppliers to innovate, building on strong one-to-one relationships that will drive smarter ways of doing things.

The main challenge with respect to frameworks supporting business systems integration is to extend them with implementation functionality to better support business system application development (Hvolby and Trienekens, 2010). An example of this is customer requirement fulfillment processes such as product development and order fulfillment. Not only do they cross the borders of the company's departments (sales, logistics, purchasing, etc.) but also various companies in the supply chain. Despite this development, business

integration across systems and borders are still not matured and to a large extent based on human interaction.

As Sanchez Rodrigues et al. (2015) presented, the Horizontal Logistics collaboration (HLC) is an area recently researched, even though the great potentiality it represents in order to create a logistic business revolution. They present a study where the HLC is possible between several retailer companies, providers and TPL companies, improving their KPIs and general performance of the supply network, concluding that the TPL companies can be enablers to support the orchestrator companies.

### ***Third Party Logistic***

On the other hand, it should be added that the importance of customer service is increasing with the impact of globalization. In any company that embraces the supply chain philosophy, logistics plays a key role in customer service. As the complexity of logistics in global commerce increases, companies need novel and innovative concepts such as the support of outsourced logistics companies (Selviaridis & Spring, 2007a).

Is this last concept, the third party logistic (TPL) companies where this research is focused in. The amount of studies regarding this specific area has been increased extremely in the last decade.

There are several studies about the partnerships with external companies to improve the productivity or just cost reduction. The partnerships with Third Party Logistics (TPL) has been studied but just from a customer's point of view, and not a service providers side of the joint partnership (Lambert et al., 1996; Núñez-Carballosa & Guitart-Tarrés, 2011).

At the beginning of the 2000's decade, the research and publications in TPL has steadily increase. This can be explained by the growing trend of outsourcing logistics activities in a wide variety of industrial sectors (Zacharia et al., 2011). The continuous wave of consolidation within the 3PL industry has also resulted in the emergence of large companies' that have the capabilities to offer sophisticated logistics solutions on a large scale (continental or global). Such logistics service providers strive to assume a more strategic role within the supply chain of clients, expanding their scale and scope of operations, but also look for different business opportunities to offer their customers better and more complete services (Selviaridis & Spring, 2007b).

Furthermore, Selviaridis and Spring (2007) report that even TPL offer more sophisticated services as consulting, information systems integrations (in the



whole supply chain), contract manufacturing and purchasing, customers prefer to have these kind of services and activities under internal control and just outsource transport and/or warehousing.

Accordingly, the objective of this research is to show the results of first, a Bibliometric study about the research of TPL as a sub-specialized area in the SCM area of study and second, an exhaustive content analysis, where the main field is about how the TPL companies could have impact and/or improved into the supply chain efficiency or results.

Nevertheless, to the best of the authors knowledge, there are just a few studies regarding the horizontal collaboration between providers and customers through a TPL as enabler (Hingley et al. 2011), and none of them presenting the implementation of a CPFR practice.

Regarding this, the research question proposed to be addressed is the following:

**Based on the published literature, is there any collaborative practice that improves efficiency in the supply chain that can be implemented through the third-party logistics companies to boost their business and rise to the challenge of the new markets?**

The structure of this study is as follows. First, there is a Bibliometric analysis of the publications about SCM and TPL and also a comparative analysis between the thematic, methodology and sectors studied to understand the status of research about this topic. Second, there is the extensive content analysis to understand the possibility to implement a Collaborative System as CPFR through a TPL company.

### 3.3. Bibliometric Analysis

#### 3.3.1. *Bibliometric Analysis: General Review*

The Supply Chain Management (SCM) is a mixture of different disciplines and activities, in relation with processes that range from logistics and transportation, operations management, materials management, distribution, commercialization, procurement management, information technologies (IT), warehousing and packaging, and documentation processes (Gómez-Cedeño, 2014). Summarizing, the SCM ideology take one or more of this functions to determine a global supply chain strategy to get better business results.

Nonetheless, some authors consider the SCM study as a fragmented study field, focusing the research in the productivity. The SCM is considered a joining of several processes, infrastructure, systems and people knowledge, and the literature has been focused, mostly in systems and processes efficiency, as an internal value for companies (Burgess et al., 2006), but just a few in the implementation of new processes or innovations to improve the efficiency.

Giunipero et al. (2006) found that supply management professionals need to assume a more strategic role in the future. There is the need for building strategic relationships, focusing on total cost and strategic cost reduction, yet collaborating and integrating with suppliers. And also, that supply chain managers of the future need to acquire strategic skills that add value and enable effective alignment with key business functions at a senior decision-making level.

Giunipero et al. (2008) presented a solid and deep bibliometric study about the progress of the supply chain management for several journals. The results show the main research lines and topics, and the methodology used in them. Even though the research lines are diverse, there is no evidence of specific studies about Third party logistic companies as relevant participant of the supply chain.

If 3PL offers outsourced logistics services for a company, and 4PL integrates and gather resources, capabilities and technology of its own and other organizations to build and execute solutions for the supply chain. With the 4PL development, the logistic industry is in the development of the concept of the Fifth Logistic provider (5PL), meaning, full-scale of e-procurement realization. In other words, it can be described as the e-logistics agent or a provider of e-solutions. In a similar way, another 5PL function should be to aggregate the demands of the 3PL in bulk volume to negotiate better prices with transport companies (airlines and shipping), regardless of which generation of logistics solution belongs to all. Even another newer term is emerging, the Seventh

Logistic Provider (7PL), that is nothing else than the fusion of a well-established 3PL with the concept of the 4PL. It can be a fusion of physical and process expertise of 3PLP with the enhanced macro-strategic consulting and IT capabilities of 4PLP (Vinay et al., 2009).

### ***3.3.2. Bibliometric Analysis: Research Steps***

Bibliometrics Research has become a standard tool of science policy and research management in the last decades. All significant compilations of science indicators heavily rely on publication and citation statistics and other, more sophisticated bibliometric technique search (Glänzel, 2003).

A two-steps process was used in this research.

**Step One**, the data collection, in order to create a data base with academic articles information within the SCM field, focused on the third party logistic companies' participation and the benefit to the whole chain. For this, four main databases were used, (1) Emerald, (2) Science Direct, (3) Scopus, and (4) Web of Science, the most used databases in Business academic studies. There were also used three key words (a) "Third Party Logistic", (b) "Supply Chain", and (3) "Efficiency", looking for them in title, content and keywords of the research articles. There was also a filter applied for language (English and/or Spanish), and type of document (research article). This first step brought 457 research articles within the filters mentioned before, published between 1991 and June 2020.

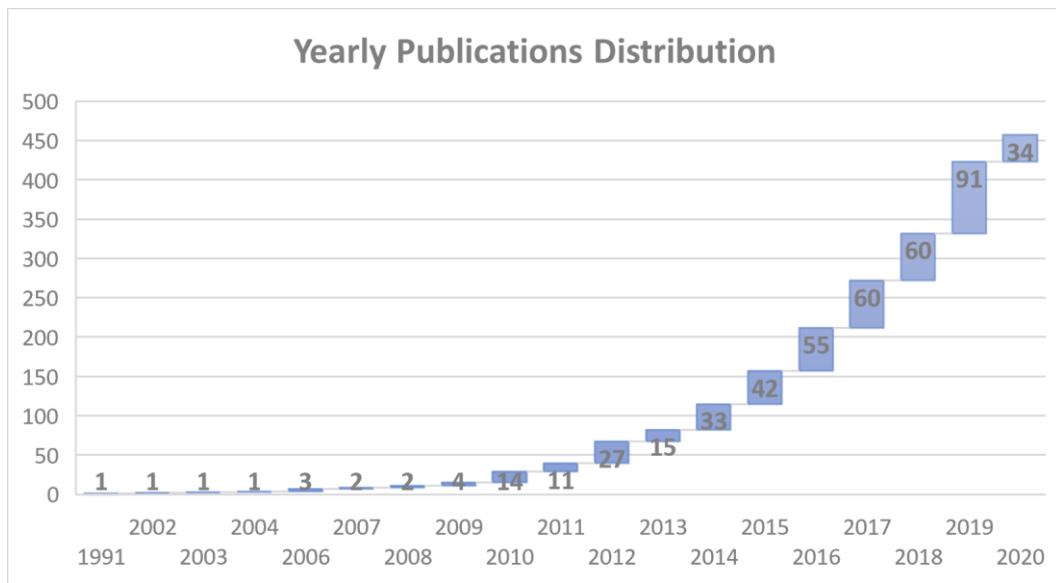
*Table 3. 1 Papers by Database*

<b>Data Base</b>	<b>Count of Articles</b>
<b>Emerald</b>	51
<b>Science Direct</b>	301
<b>Scopus</b>	26
<b>WoS</b>	79
<b>Grand Total</b>	<b>457</b>

\*Source: own elaboration

With a basic accumulative graph (Graph 3.1) is it possible to analyze how have been increasing the number of articles focus on the TPL companies during the last decade. As mentioned before, there have been an increase in the literature about SCM and TPL companies during the las decade, presenting the 93,6% of the studies found in the last 10 years (2011 – 2020).

Graph 3. 1 Papers published by year



\* Source: own elaboration

**Step Two**, in depth revision of the topic for the research articles gathered in Step One. There was a double check of the research topics based in the key words analysis, to understand if there were more than only keyword, or a mention of them in the title or abstract. After a deep revision of the data base, there were qualified only 56 articles that were developing the research of TPL companies in the development of the supply chain, or in the chain efficiency improvement. These articles where read at Introduction, methodology and conclusion levels in order to get the Thematic topic analyzed, the methodology used and the sector targeted by each study.

As shown in Table 3.2, there is a classification of the topics of the 457 articles as (i) “All”, all three topics found in the article, (ii) “3PL/Eff”, Third party logistic companies and efficiency topics found in the article, (iii) “3PL/SCM”, Third party logistic companies and Supply Chain Management topics found in the article, (iv) “3PL”, only Third party logistic companies topic found in the article. There are 56 articles focused in the the third party logistic companies in

total. For the rest of the articles, the classification is as (v) “SCM/Eff”, Supply chain management and efficiency topics found in the article, (vi) “SCM”, only Supply chain management topic found in the article, (vii) “Eff”, only Efficiency topic found in the article, and finally (viii) “None”, none of the three topics found in the article, meaning that the main argument of those researches were from another topic, and had one of the three keywords because they were related as a secondary matter.

*Table 3. 2 Thematic table regarding topic addressed by research*

<b>Keyword Combinations</b>	<b>Count of Articles</b>
All	3
3PL/Eff	5
3PL/SCM	31
3PL	14
<b>Total 3PL</b>	<b>53</b>
SCM/Eff	4
SCM	142
Eff	3
None	255
<b>Grand Total</b>	<b>457</b>

\* Source: own elaboration

### ***3.3.3. Bibliometric Analysis: Preliminary Results***

These 53 articles are taking in consideration for the next steps of the analysis, focusing in the TPL companies literature. The same first analysis by database can be done for the 53 articles as shown in Table 3.3.

*Table 3. 3 Papers by Database: after filtering by topic*

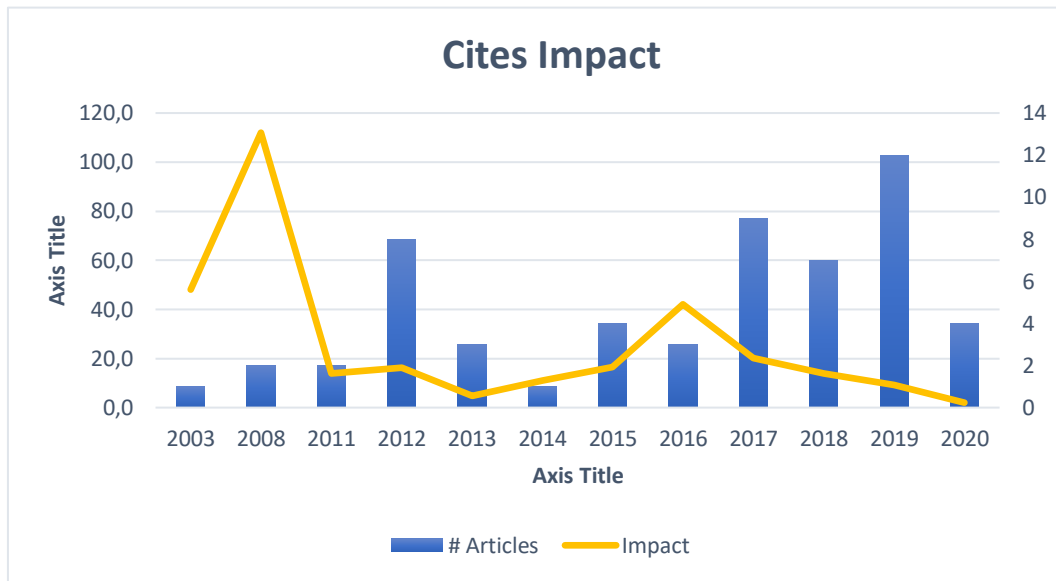
<b>Data Base</b>	<b>Count of Articles</b>	<b>% articles v/s first analysis</b>
<b>Emerald</b>	1	2.0%
<b>Science Direct</b>	8	2.7%
<b>Scopus</b>	13	50.0%
<b>WoS</b>	31	39.2%
<b>Grand Total</b>	<b>53</b>	11.6%

\* Source: own elaboration

In Table 3.3 there is also a percentage comparison between the articles remaining after the filter of the topics of main research in the articles. This means that only 2,0% of the articles found with the keywords in Emerald database are focused in the topic as main classification, 2,7% in Science Direct Database, but on the other side, it is a big percentage in Scopus and Web of Science databases, 50,0% and 39,2% respectively. Lastly, only the 11,6% of all the 457 papers found are in this group. This can be a first approach to understand the accuracy of the classification and the search engine from each database.

The impact shown in Graph 3.2, presents the number of articles by year and the impact (calculated as the number of cites divided by the number of articles per year). With this ratio, it can be observed that there are 3 main peaks in the impact, in year 2003 with an average of 48 cites by article published, in year 2008 with an average of 112 cites by article published and, in year 2016 with an average of 42 cites by article published.

Graph 3. 2 Papers published by year



\* Source: own elaboration

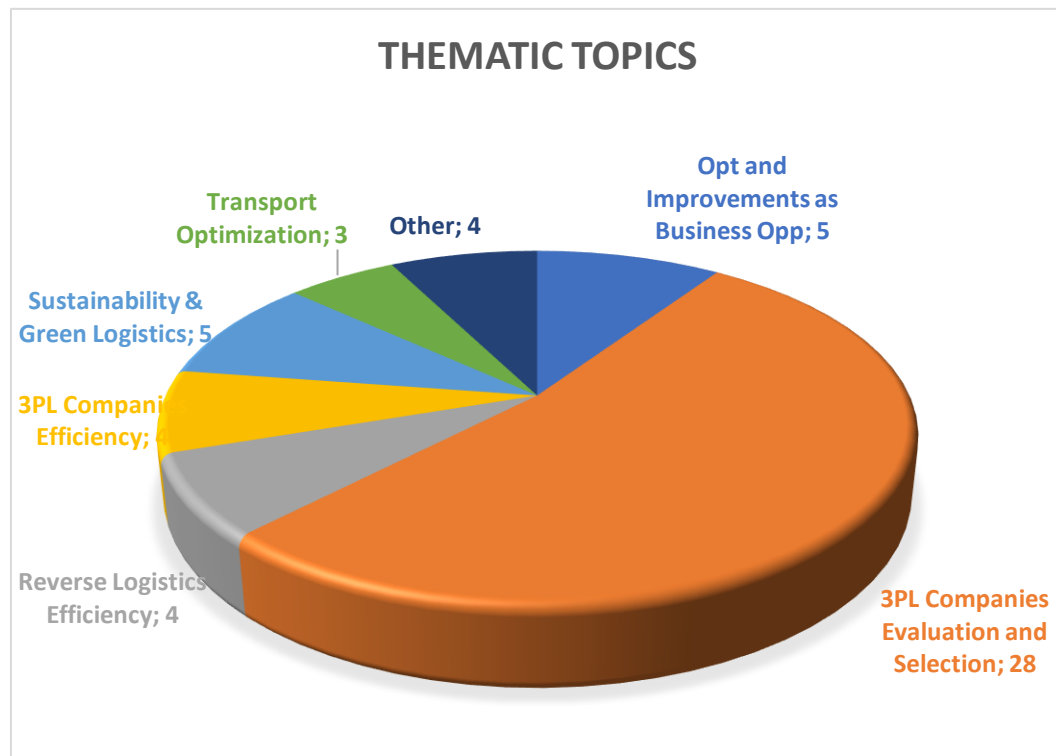
After analyze the 53 research articles there are 3 basic results: the thematic topic of the research, the methodology used in the study, and the analyzed sectors.

For the Thematic Analysis there are 7 characteristics' groups to categorize all the 53 papers. The standardization of this groups are: Optimization and Improvements as Business Opportunities, where the main topic is about optimizing some existing process or business, or looking to include a new business opportunity for the company analyzed; 3PL Companies Evaluation and Selection, this is the main thematic in the researches, where the authors uses different tools to analyze evaluate and present a selection tool to choose between different 3PL companies; Reverse Logistics Efficiency, where a specific process of reverse logistics is analyzed in different perspectives, or evaluate different 3PL companies only through their reverse logistic capacities; 3PL Companies Efficiency, measures the efficiency of one specific process or the main behavior of one or more 3PL companies or logistic environment using different analytic tools; Sustainability & Green Logistics, where the study focused in the sustainability point of view of a 3PL company or a supply network and it is compared or analyzed against others ;Transport Optimization, when the focus of the study is about the optimization of the transport process or even the transport opportunities for a 3PL company or logistics network ;and Others, where the research where very specific and unrelated subject to any

of the prior categories or even among them (there are 4 research paper in this category).

In graph 3.3 there are presented the thematic topic analysis by each research paper, indicating the number of papers within each category.

Graph 3. 3 Thematic analysis



\* Source: own elaboration

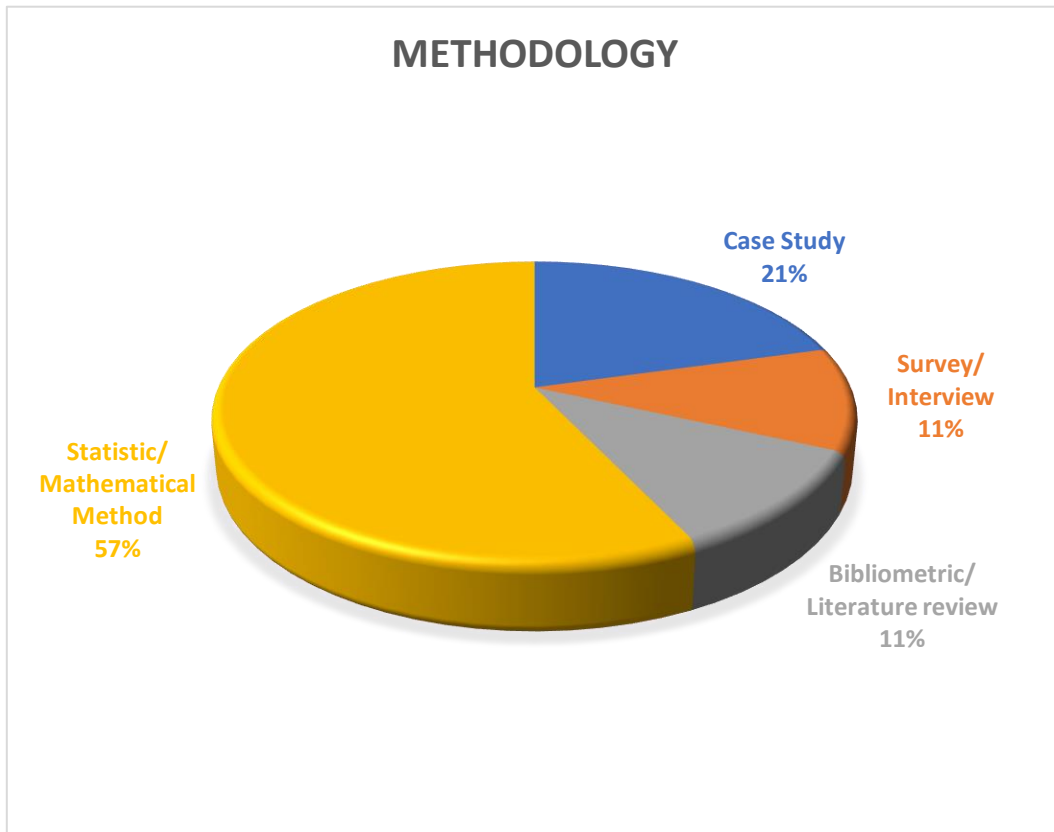
The Methodology used in each research were 4, and several of them combined among them. The main methodology used are Case Study, when the research focused in one or more companies study as a target, comparing their general behaviors/results or analyzing some particular process in them; Survey/Interview, even the authors used surveys or guided interviews to gather information and then analyzed with some models or any other mean; Bibliometric/Literature review, when the methodology was a bibliometric study or an exhaustive literature review to understand the state of art of some specific topic or the published researches; Statistic/Mathematical Method, when the methodology used is any statistical model or tools, or any mathematical model such as Ordinary Least Square, Fuzzy Analytical Hierarchy Process, Linear Programming Model, Data Envelopment Analysis, etc. This last methodology



group is a combination of Conceptual models, Simulations and Modeling as presented by Panahifar et al. (2015).

In graph 3.4 there are presented the methodology groups by each research paper, indicating the percentage of papers within each group.

*Graph 3. 4 Thematic analysis*



\* Source: own elaboration

Since there are several papers that use more than one methodology even between the groups shown above in Graph 3.4, Table 3.4 is presenting the combination for all the papers studied.

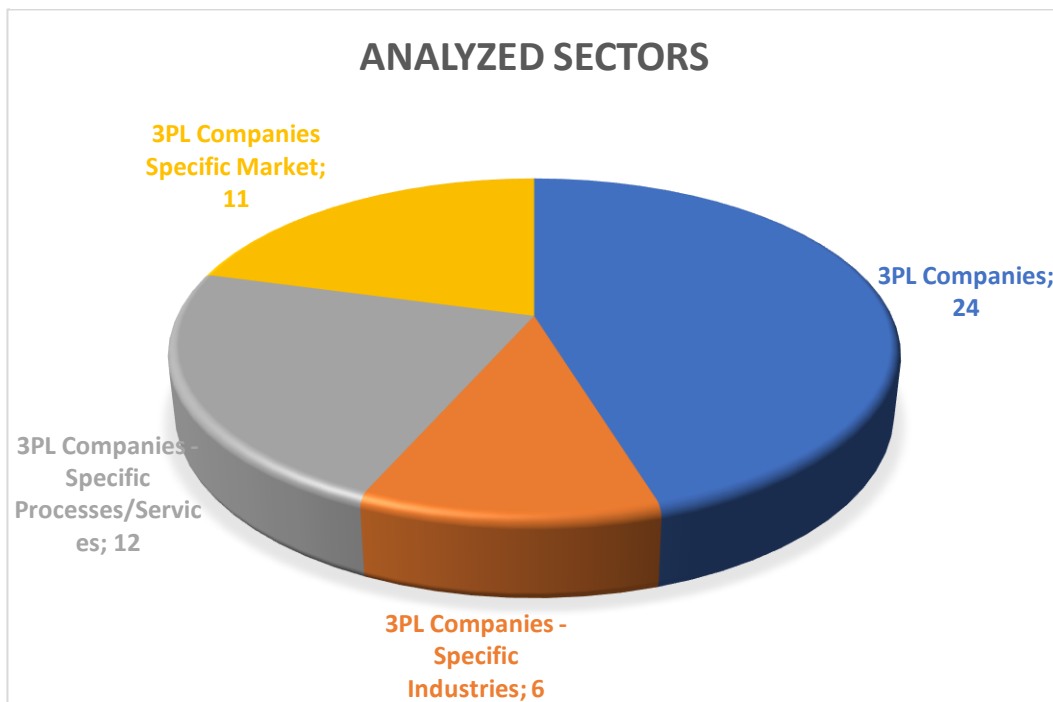
Table 3. 4 Methodology groups

<b>Methodology Groups</b>	<b>Count of papers</b>
<b>Bibliometric/Literature review</b>	6
<b>Case Study</b>	6
<b>Case Study - Statistic/Mathematical Method</b>	10
<b>Statistic/Mathematical Method</b>	24
<b>Survey/Interview</b>	2
<b>Survey/Interview - Bibliometric/Literature review</b>	3
<b>Survey/Interview - Statistic/Mathematical Method</b>	2
<b>Grand Total</b>	<b>53</b>

\* Source: own elaboration

Lastly the Analyzed Sector is the type of industry or business analyzed in each research, finding 4 different groups of them. 3PL Companies, when the research point to 3PL companies in general, regarding processes or relationships with customers or other companies, without being explicit in the type of industry; 3PL Companies in Specific Industries, when the research focuses, explicitly, on a specific industry for the study; 3PL Companies in Specific Processes/Services, when the research focuses on specific processes of their internal functions or services that a 3PL company may offer to their customer; 3PL Companies Specific Market, when the research point to a specific market where a 3PL company operates .

Graph 3. 5 Analyzed Sectors



\* Source: own elaboration

In Graph 3.5 are shown the number of papers within each analyzed sector group.

It can be inferred from the above bibliometric study that the majority of the 3PL company researches have been made on evaluation and selection topics, using statistical or mathematical models, being 68% of the studies (in combination with other methodologies or by themselves). Is on the authors knowledge, after this exhaustive review, that there has not be published any effort to look for new methodologies, process or business models to be integrated in a 3PL company as enabler for future collaborative practices.

### ***3.4. Content Analysis***

#### ***3.4.1. Content Analysis: State of Art***

The Third Party Logistic (TPL) companies offer different solutions trying to fulfill their customer's needs. Regarding this, TPL's uses different strategies to offer all kind of services (Hertz & Alfredsson, 2003). These strategies bring several benefits to the TPL customers, as transportation savings and service improvement, packaging, and distribution network management. These factors are improved when a company decides to partnership with a TPL in the medium and long term (Hsiao et al. 2010). Following this affirmation, Rabinovich et al. (1999) proposes that firms can improve customer service and reduce costs when they outsource different logistic activities, supporting that in the TPL "know-how" and economies of scale capabilities that they represent. The TPL also presents benefits in international supply chains, assuming roles as forwarders or using their connections and partnerships with external freight forwarders (Vasiliauskas & Jakubauskas, 2007).

Furthermore, Sinkovics et al. (2018) examine a set of relationships among the TPL's resource commitment, collaboration and innovation, and their performance outcomes, finding that collaboration between the manufacturers and the TPLs mediates the relationship between resource commitment and innovation, and performance. TPLs are becoming much more of a collaborative partner which supports the idea of a value co-creation strategy. The authors proved that there are positive relationships between TPLs resource commitment and manufacturer performance, and between TPLs innovative attitude and practices, and manufacturer performance. For commitment aspects they look at financial resources, physical assets, technological resources and managerial resources assigned to the manufacturer account. For innovation aspects they look at the introduction new of technology for the industry and the company, and the offering of unique services among the competency (other TPLs). To measure the performance, they open the concept in 3 different ways; (1) operating level performance such as cycle time, service level, etc., (2) market performance such as company's overall performance in market, competitiveness of the manufacturer firm due to improvements given by the TPL, etc., (3) relational performance to share the benefits of working together as venture for the TPL company and the customer (manufacturer firm).

Despite all the benefits that operating with an external logistic service provider can bring to companies, one of the main focuses that TPL needs to have is flexibility and the introduction of new services to their customers to offer a holistic service solution. Hartmann & De Grahl (2011) proved the effect

that collaboration and flexibility contribute to customer loyalty (loyalty from TPLs company's customers) regarding three components; (1) retention as the contract or services renovation, (2) extension such as the hiring of new services to the TPL from their customers, (3) referrals to other customers in the industry to enlarge the TPL market and customers.

TPL has attracted considerable research attention in the recent past. These companies are specialized partners that participate in the logistic operations of their customers (warehousing, transport, packaging, forwarding, among others), giving a solid experience in this area. The contributions in this specific field of the SCM and Operations study had rise in the last 20 years (Marasco, 2008), appearing as a "sub-field" to research.

Also, Selviaridis & Spring (2007) reveal that TPL research is mainly empirical-descriptive, but lack a theoretical foundation. The main methodology is survey research, aligned with the positivism research tradition within logistics. Nonetheless, the authors present several propositions for future research in this field regarding the findings.

Studies should be focus directed towards more normative, theory-driven and qualitative method-based studies.

Further empirical research in relation to TPL design/implementation and fourth party logistics services is needed

Regarding the improvement in performance and services offered, Subramanian et al. (2016) present different elements that the TPL companies must follow looking at the globalization and the present and future needs of industrial and distribution companies. The main elements are flexibility, innovation and collaboration. The TPL companies need to be flexible to adapt their operations to different type of customers, integrate with them, and absorb several characteristics from their operations. Also, present innovative solutions to have a differentiator factor from the competency.

After the content analysis the following research proposition can be presented:

**There is enough evidence in previous researches that can support the concept of a TPL company as enabler to implement evolved collaboration systems as CPFR into a supply network.**

### *3.4.2. Content Analysis: Methodological approach*

After the bibliometric analysis presented in the prior chapter, about the state of art of the literature for TPL companies, an analysis of the literature content should give a base of evidence that bear the concept of a TPL company as enabler to implement evolved collaboration systems as CPFR into a supply network, in order to support or decline the research proposition.

As mentioned before, “the objective of this research is a to generate relationship conceptual with the gathered insight from an exhaustive content analysis, where the main field is about how the TPL companies could have impact and/or improved into the supply chain efficiency or results”.

This content analysis pretends to answer the research question “Based on the published literature, is there any collaborative practice that improves efficiency in the supply chain that can be implemented through the third-party logistics companies to boost their business and rise to the challenge of the new markets?”

With this objective in mind, a content analysis is developed, looking for the concepts that relates the TPL companies with their customers, and the kind of relationship they should have to improve their services. There were found 39 articles that point to 29 different concepts. These concepts were grouped by 8 basic topics, getting a parallel as evolving steps in the relationships from TPL and their customers as Hertz & Alfredsson (2003) describe, focusing on how the different services and processes help to relate them in a more strategic plan.

These 8 topics are described below:

- **TPL participation in Logistic Operations** is a topic highly researched in the SCM area, as Bolumole (2003) explains about his study to evaluate the logistic providers role in the supply chain management.
- **TPL participation in the supply chain optimization**, as shown in their research with the CEO of main TPL companies in North America in Lieb & Lieb (2011) study the progress of these firms and the new services they present to their customers to optimize the supply chain.
- **TPL participation with customers** is a concept studied by Goudarzi K. (2015), where they provide an understanding of the role of the customers in the supply chain.
- **TPL participation in logistic strategy** has been studied not only from a logistic provider business perspective, but also how can affect their new strategies to their customers and to the market, as Kim, Yang, & Kim (2008) and Hertz & Alfredsson (2003). In both studies there are available

different approaches to the participation of TPL in logistic strategy; in the first one through an analysis using new business strategies for logistics operators markets, and the second as the development and evolution of the concept of TPL as it is known.

- **TPL participation with vendors** is studied by Zacharia, Sanders, & Nix (2011) with the logistic provider as an orchestrator of different aspects in the supply chain, being a connection and enhancer of the relationships with other actors as the vendors.
- **TPL improves SC efficiency**, as Min & Joo (2006) studied how the efforts of logistic providers to improve their own efficiencies reverberates in the whole supply chain efficiency.
- **Collaborative models improve SCM efficiency**, as Keller & Daugherty (2001) provide evidence that the fact that there is collaboration between logistics operators and their respective customers is the first step towards an effective collaboration and efficiency relationship within companies and in their supply chains.
- **Implementing CPFR from TPL improve efficiency in SCM** is a non-studied topic yet as the best of the authors knowledge.

### 3.5. Results and Discussion

Regarding the methodology approach exposed in the previous chapter, and to answer the research question, in this chapter are described and exposed the results obtained in the content analysis research.

The content analysis is designed to get information and define a theory-based model for further research analysis. As shown in Table 3.5, the main 8 topics with detailed concepts to get deep understanding of the relationship between them, presented as evolving steps from basic relationships to the more complex.

*Table 3. 5 Topic and Concepts*

Topic	Concept	Reference
TPL participation in Logistic Operations	The TPL is essential to give a Good Customer Service.	Sahay (2006) Bhatnagar et al. (1999)
	The TPL support the warehousing processes of the company.	Baruffaldi; Accorsi; Manzini (2019)
	The TPL support the freight processes of the company.	Power et al. (2007)
	The TPL support the logistic coordination processes of the company.	Chen L.; Baofeng H.; Shulin L. (2015) Hertz & Alfredsson (2003)
	The TPL support the inventory management processes of the company.	Cheong (2004)
TPL participation in the supply chain optimization	The TPL has total system integration with the company ERP.	Mortensen & Lemoine (2008) Sheikh & Rana (2011)
	The TPL has knowledge of the company inside operations.	Chen et al. (2011) Mellat-Parast & Spillan (2014)
	The TPL contribute with ideas and solutions for the business processes optimization.	Rollins et al. (2011)



	The TPL participates in the demand planning forecast of the company.	Min (2013)
TPL participation with customers	The TPL participates in the join demand forecasting with the Customer.	Trentin (2011)
	The TPL generates purchase orders for the customer replenishment process.	Graves et al. (2011)
	The TPL coordinates follow up meetings and activities within customer, the company and the Warehouse.	Skjoett-Larsen (2000)
	The TPL has system integration with customers.	Chow et al. (2007)
	The TPL has total visibility of inventory levels, demand forecast and goods movements in the whole chain.	Daugherty et al. (2006) Holcomb et al. (2011) Liu & Kumar (2003) Simatupang et al. (2002)
TPL participation in logistic strategy	The TPL participates and contribute in the company logistic strategy.	Hong Bo et al. (2011)
	The TPL participates in the logistic relationship and logistic strategy with customers.	Hong Bo et al. (2011)
	The TPL participates in the logistic strategy implementation.	Yan Yeung et al. (2006) Stank et al. (1999)
	The TPL measures and generates periodic reporting for the logistic operations.	Domingues et al. (2015)
TPL participation with vendors	The TPL participates in the negotiation with vendors.	Zhan-feng & Yong (2008)
	The TPL administrates the vendor management.	Ali et al. (2014)

TPL improves SC efficiency	Using a TPL benefits the supply chain management of the company	Zacharia et al. (2011)
	The TPL delivers value to SCM processes	Power et al. (2007)
Collaborative models improve SCM efficiency	VMI improves the delivery and inventory level efficiency in the supply chain	Claassen et al. (2008)
	CPFR improves inventory levels, replenishment lead-time and planning	Claassen et al. (2008)
Implementing CPFR from TPL improve efficiency in SCM	TPL has the know-how to implement CPFR	Vivaldini et al. (2008)
	TPL has the resources to implement CPFR	Qureshi et al. (2008) Zacharia et al. (2011)
	TPL can offer CPFR methodology to many customers	Vinay et al. (2009)
	TPL has staff training capacity for CPFR implementation	Sanches Flores & Primo (2018)
	TPL has the technical knowledge and capabilities to a system integration with multiple platforms	Hanus (2013)

\* Source: own elaboration

Referred to the topics presented in Table 3.5, each one of them are associated with several concepts:

- **TPL participation in Logistic Operations:** the TPL companies must be part in the logistic operations not only executing them but also planning them. It is essential to have a good customer service that the at the execution level have clear the priorities. The TPL has to be part of the warehousing administration, since they should have experience and know how that can be useful in the own warehouse, the same as the expedition process, even there are the own TPL freight or other carrier companies. The internal logistic coordination processes should be advised by the TPL, helping reduce the inefficiencies or process gaps.

Finally, the inventory management should be done coordinating efforts between the company and the TPL.

- **TPL participation in the supply chain optimization:** the supply chain optimization points to organize the whole process in the network, pointing to reduce gaps and inefficient processes. To do this, the TPL companies should participate, or at least advise in the system integration through all the network, meaning, company, TPL, customers (if available). There is also recommended that the TPL understand the internal processes in the company, so they can really be part of the network giving ideas or supporting the business. Finally, the TPL should be part of the demand planning forecast process in the company so they are aware of the volume and/or mix changes, seasonality, etc.
- **TPL participation with customers:** the TPL should participate in the processes where the impact is directly into the customer service, such as joint demand forecasting (company, TPL and last customer), being part of the replenishment through the purchase process, managing periodic meetings with the company, customer and warehouse to agree inventory levels, check service levels, etc., integrate systems in the whole network (end to end), and keep tracking of all the inventory and transit visibility across the supply network.
- **TPL participation in logistic strategy:** when the strategy of the company includes a TPL for the administration of the full supply chain, or only as a part of it, the TPL should be part of the strategy to contribute to the logistic strategy, help to establish strategic relationship with the customers, and keep track on the logistic operations thorough reporting and indicators to look for improvements.
- **TPL participation with vendors:** there is also an opportunity to improve the relationship with the vendors, where the TPL could participate in the negotiations and administration the relationship with them, helping in the purchasing or replenishment process.
- **TPL improves SC efficiency:** the supply chain could be more efficient when is operated by a TPL, since they might have synergies with other companies, carriers and in the warehousing.
- **Collaborative models improve SCM efficiency:** there are different horizontal collaborative models to improve the delivery and inventory level efficiency as the Vendor Management Inventory (VMI), and also

some others that point to improve inventory levels, as well, replenishment lead time and planning as CPFR.

- **Implementing CPFR from TPL improve efficiency in SCM:** since the efficiency in the SCM can be improved when implementing CPFR, when it is done from a TPL company this can bring more benefits since TPL companies have the know-how in implementing collaborative systems, they have resources to implement several operations among supply networks, they can reply the CPFR methodology to several customers at the same time, and they have the capacity to train and lead a workforce strong enough to face a challenge as implementing a system like this. Finally, a TPL has the technical knowledge and capabilities to a system integration with multiple platforms, facilitating a multi-customer integration.

Therefore, this research shows the possibilities that a TPL company can offer to the market as an enabler and orchestrator of the implementation of a sophisticated methodology like CPFR.

### 3.6. Conclusions

Regarding the presented research proposition “*There is enough evidence in previous researches that can support the concept of a TPL company as enabler to implement evolved collaboration systems as CPFR into a supply network*” it can be concluded that since the evidence is partially presented by several researches in different years, as exposed in Table 3.5, it is not enough to prove it entirely. There are highlights of evidence, but it is necessary to do a future research to analyze the relationship between TLP companies and their customers and check the opportunities that can be taken by them in order to evolve into a more collaborative supply network.

As a result of the content analysis there is the following conclusion table (Table 3.6), summarizing the main ideas of all the articles reviewed:

*Table 3. 6 Conceptual Integration and Conclusions*

Topic	Reference	Conceptual Integration and Conclusions
TPL participation in Logistic Operations	Sahay (2006) Bhatnagar et al. (1999)	Authors present how companies are looking to improve their Customer Service Level by integrating TPLs in their own operations.
	Baruffaldi; Accorsi; Manzini (2019)	Authors present how TPLs should participate in the different internal operations processes of the company to improve their services, such as warehousing (about location and specifications for the proper warehouse), freight (through local or multinational carriers), internal logistic processes (like information flow, system integration, etc.), and inventory management processes.
	Power et al. (2007)	
	Chen L; Baofeng H; Shulin L (2015) Hertz & Alfredsson (2003)	
	Cheong (2004)	
TPL participation in the supply chain optimization	Mortensen & Lemoine (2008) Sheikh & Rana (2011)	Authors present a specific integration pointing into the ERP systems or any other electronic communication between the companies areas, supported by the TPL as enabler for this capabilities.

	Chen et al. (2011) Mellat-Parast & Spillan (2014)	Authors present specific knowledge and participation from the TPL in the customers supply chain optimizations, participating in the different business processes (not necessary in the daily operations but in the organization of the general process, as well as the demand planning process.
	Rollins et al. (2011)	
	Min (2013)	
TPL participation with customers	Trentin (2011)	Authors present a participation of the TPL with customers from a management point of view, where there is a role in the joint demand planning for the whole network (vendedores, company and customers), participates in the purchasing and replenishment process and finally participates in the coordination for periodic follow-up meetings between the company, their customers, and the warehouse.
	Graves et al. (2011)	
	Skjoett-Larsen (2000)	
	Chow et al. (2007)	Authors present an integration in the systems from the company to the customers through the TPL, taking their capabilities in this specific area so a total visibility can be achieved for the whole chain.
	Daugherty et al. (2006) Holcomb et al. (2011) Liu & Kumar (2003) Simatupang et al. (2002)	
TPL participation in logistic strategy	Hong Bo et al. (2011)	Authors present how the TPL should contribute in the design of the company logistic strategy, and how the strategic logistic relationship with the customer should be to support the commercial strategy.
	Yan Yeung et al. (2006) Stank et al. (1999)	Authors advise how the logistic strategy should be implemented with the participation of the TPL.
	Domingues et al. (2015)	Authors present how do a follow-up of the strategy implementation

		through periodic reporting and meetings with useful indicators.
TPL participation with vendors	Zhan-feng & Yong (2008)	Authors present a concept where the specialized TPLs should have a better negotiating capacity since the large number of companies they work with, so this should help the negotiation with the companies vendors.
	Ali et al. (2014)	Authors present the vendor management, placing the purchasing orders and maintaining the raw materials inventory level.
TPL improves SC efficiency	Zacharia et al. (2011)	From a slightly different perspective the authors present how working together with a TPL a company should benefit their own supply chain management and on the other hand, how the TPL adds value to the SCM processes through constant feedback and support.
	Power et al. (2007)	
Collaborative models improve SCM efficiency	Claassen et al. (2008)	Authors present that there are different horizontal collaborative models to improve the delivery and inventory level efficiency as the Vendor Management Inventory (VMI), and also some others that point to improve inventory levels, as well, replenishment lead time and planning as CPFR.
Implementing CPFR from TPL improve efficiency in SCM	Vivaldini et al. (2008)	All the authors present how a TPL should improve the efficiency in the company SCM, through different aspects. A TPL should have the know-how to implement complex processes, and the resources to implement them such as CPFR. A TPL can replicate processes and best practices through
	Qureshi et al. (2008)	
	Zacharia et al. (2011)	
	Vinay et al. (2009)	
	Sanches Flores & Primo (2018)	

	Hanus (2013)	<p>diferent "accounts" (the diferent networks where they work within the different customers and vendors), and htey have the capability to train work force for different new processes. Finally, TPL has the system integration capabilities up and down to have visibility and informations transferring through the supply network. At the end the TPL companies are presented as the comming orchestrators for future improveentes in the SCM.</p>
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\* Source: own elaboration

Moreover, the research question “Based on the published literature, is there any collaborative practice that improves efficiency in the supply chain that can be implemented through the third-party logistics companies to boost their business and rise to the challenge of the new markets?” shows that there are several practices already working in the market to improve efficiency in the supply chain, including horizontal collaboration practices, collaborative planning forecasting and replenishment, among others. There are also several studies about the third party logistic implementation of new services into the market to improve efficiency to their customers. However, the studies of the third party logistic companies show that there are just a few studies regarding the horizontal collaboration between providers and customers through a TPL as enabler (Hingley et al. 2011), leaving the opportunity to increase this line of research.

After developing the exhaustive content analysis, the 8 topics presented can give new lines of research by themselves or together. According to the authors knowledge there is no such grouping in the existing literature, giving the opportunity to dive in these areas as concepts to understand deeper opportunities for the third party logistic companies and the research about them.

This research presents a state of art about a TPL as a possible orchestrator to implement CPFR methodology among the supply chain, after an initial bibliometric research and complemented with a content analysis, what is a strong starting point for future researches. As Nix (2011) presents in his



research “The Emerging Role of the Third-Party Logistics Provider (3PL) as an Orchestrator”, TPL companies are an important actor to improve the efficiency and open new ways to operate the supply chain.

For future researches the result of the content analysis gives a new line for investigation such as “to analyze the interaction of the 8 factors in a model applying PLS technique”. These 8 factors shown on this research present an opportunity to understand the relationship that could have all of them in order to justify a TPL company as an orchestrator to implement a CPFR methodology. This can be based on a survey and then analyze the results with a PLS model as an exploratory option.

On a managerial point of view, this research reveals that there is space to explore new services as TPL companies to offer to their customers, being enablers of an implementation of CPFR methodology. Using their capabilities to absorb this service for several customers as a differentiating advantage.

Finally, this research opens the opportunity to prove in further researches that a TPL company can offer to the market as an enabler and orchestrator of the implementation of a sophisticated methodology like CPFR.



# *CHAPTER IV*



## **4. Implementing CPFR as Third Party Logistic: a PLS Study in Spanish Market**

### **4.1. Abstract**

#### *Purpose*

Companies choose a third party logistic (TPL) providers for several reasons, mainly cost, for the normal operations as transport or inventory management. The purpose of this research is to present TPL companies as possible enablers for horizontal collaboration systems.

#### *Design/ methodology/ approach*

The interactions of a model with 8 factors for logistic operations is analyzed with a partial least square (PLS), gathered from a survey to logistic professionals in Spaniard companies.

#### *Findings*

The target of this research, implementing a Collaborative Planning Forecasting and Replenishment (CPFR) system with TPL as an orchestrator improve efficiency in Supply Chain Management (SCM) is mainly supported by the factor of the TPL participation in daily Supply Chain operations.

#### *Practical implications*

It is possible and logical to boost the TPL companies as strategic partners to gain efficiency in the SCM. They have the capabilities and knowledge to take the next steps and promote collaborative ways to work among the networks.

#### *Originality/ value*

This paper results show the great possibilities for the TPL companies to move to the next step on the efficiency evolution and offer a more integrated service to the whole supply network by implementing a collaborative system such as CPFR.

## 4.2. Introduction

Supply Chain Management (SCM) has increased its preponderance and relevance in most companies, more specifically oriented towards improvement and perfecting customer relations while reducing or maintaining operational and inventory costs. A part of this improvement has occurred through the integration of a collaborative work with third party logistics, which has grown in the last decades (Hertz & Alfredsson, 2003).

This increment is not only due the globalization and the huge increment of goods transactions all over the globe, but also because of new techniques and actors in the Supply Chain Networks. On one side, there are some new collaboration concepts that start applying collaborative tool to improve the network efficiencies. On the other side, there are bigger and more efficient partners in the Supply Chain business as the Third Party Logistic (TPL) companies, improving their internal processes and capabilities to better service the supply chain.

As one of the higher growth collaborative tools, Collaborative, Planning, Forecasting and Replenishment (CPFR) is being implemented with increased frequency in companies and Supply Chain Networks to improve efficiency (Fliedner, 2003). The studies regarding this collaborative processes have also increased in number, with research papers and books (implementation manual style) in order to spread and increment the usage of such methods. Ireland & Crum (2005) published their work explaining the way to implement such a method and other collaborative systems, based on research and practice succeed implementation case studies.

The literature in this specific topic has also increased as well as the practical implementation. Lapide (2010) and Burnette (2010) cover the history of implementations the evolution of this tool, and also how the standardization became a need for certain companies in their global operations.

In the early 2000's decade, the research and publications in third party logistics (TPL) was largely increased. This can be explained by the growing trend of outsourcing logistics activities in a wide variety of industrial sectors (Transport Intelligence, 2004). The continuing wave of consolidation within the 3PL industry has also resulted in the emergence of large companies' that have the capabilities to offer sophisticated logistics solutions on large scale (continental or global). Such logistics service providers strive to assume a more strategic role within the supply chain of clients, expanding their scale and scope of operations, but also looking for different business opportunities to offer their customers better and more complete services (Selviaridis & Spring, 2007).

One of the last publications studying the TPL companies, is an exhaustive bibliometric study, done by Evangelista et al., (2018) where the main focus is to fill this gap by presenting the results of a systematic literature review of publications in the area of environmental sustainability in TPL companies between the years 2000 and 2016.

In order to understand the relationship between the TPL companies and the implementation of a collaborative system as CPFR, considering specifically the TPL as an orchestrator, the usage of 8 new grouping concepts is needed to prove the orchestrating role. These 8 grouped concepts are found on a previous research (Hargous & Guitart Tarrés, 2022), where 29 different topics were analyzed to understand the relationship between TPL companies and their customers.

For the actual research, the authors propose the following objective: **to analyze the interaction of the 8 factors in a model applying PLS technique.**

Following the fundamentals that Núñez-Carballosa & Guitart-Tarrés (2011) present, there is a gap in the research of companies in Spain working along with TPLs. They present a study showing that most companies choose to work with TPL from a costs point of view, and not as a strategic partner to improve the efficiency in their logistics operations. Subsequently, the objective of the present research, is to analyze the implementation of an horizontal collaborative system as CPFR from a TPL side to boost the possibilities of adding value to the strategy of TPLs customers.

### 4.3. Literature Review

Within the current collaborative practices, the main strategies used to improve the SCM components has been to create collaboration between vendors, in their producer's or supplier's roles, and their customers. This type of relationship strategy has been used mainly in supply chains for medium to large retailers (Kazemi & Zhang, 2013). Following this principle, we observe several arguments that imply the usage of said practices.

In the line of horizontal collaborative practices, Attaran & Attaran (2007) study shows that through implementing Collaborative Planning Forecasting and Replenishment (CPFR) systems, companies can dramatically improve their supply chain in areas like demand planning, synchronized production scheduling, logistic planning, and new product design. This practice forces suppliers and providers to innovate, having to build strong one-to-one relationships with their customers, driving smarter and more efficient ways to operate. After their study, the authors conclude that most companies and industries can benefit from CPFR. This is also confirmed by Chang et al. (2007), with a research and practical application of an enhanced CPFR model in a retail-provider relationship. The research finds that the CPFR strategy implementation enhances the forecast accuracy and decreases the inventory level, furthermore, helping to decrease the bullwhip effect present in the supply chain.

On the other hand, the CPFR implementation implies a high cost regarding system development (in order to communicate provider and customer systems), head count increment and training costs (in processes and systems), (Fliedner, 2003). Considering a tool (CPFR practice system) involving SCM activities including production and purchase planning, demand forecasting, and inventory replenishment between supply chain trading partners.

The efforts of Hollmann et al. (2015) to analyze the CPFR literature show different types of research, pointing to implementation, or the different types of models that fit in different cases, but all of them implemented between one or more providers and one or more customers; meaning the implementation is a relationship reinforcement already created between suppliers and customers, none of them presenting an extra player or participant in the relations. Regarding the implementations of CPFR practices, there is no consensus regarding the breadth and scope of CPFR configurations, depending on the supply chain. To implement this practice, the main factors are trust, information technology and the information quality; success or failure in the implementation depend on them. CPFR is considered one of the most advanced and



comprehensive supply chain configuration process and has direct impact in the supply chain performance.

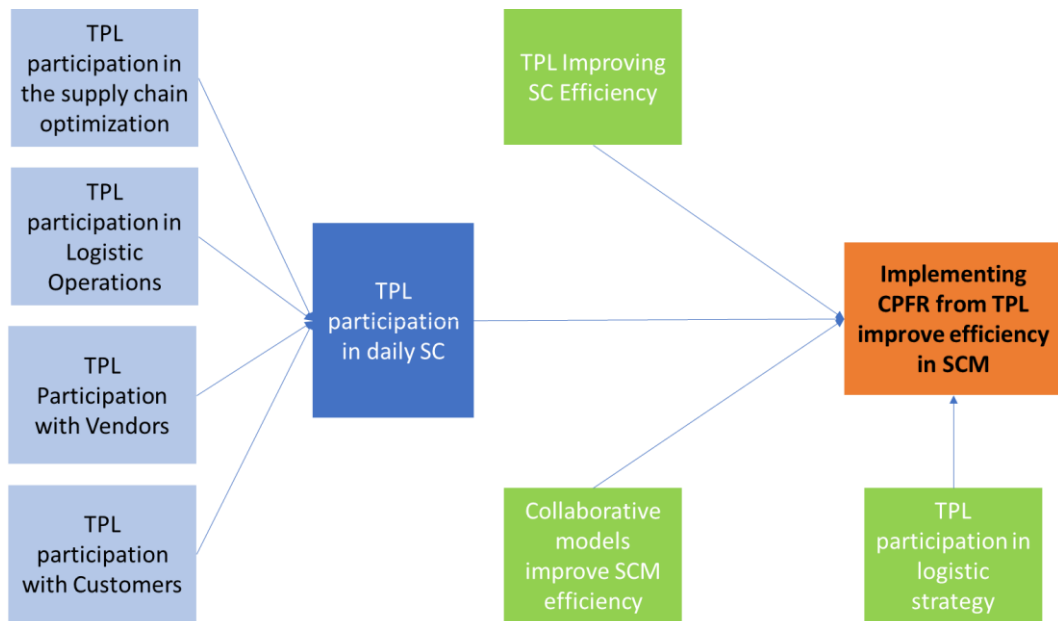
There is empirical evidence provided by Hill et al. (2018) of how CPFR implementation contributes to the supply chain coordination activities to serve customers with improved demand forecasting and production scheduling. CPFR provides a framework that covers a broad range of issues including demand forecasting, inventory management, production and replenishment planning, and order fulfillment. The authors prove the effect of CPFR adoption on a firm's financial and operational performance as compared to similar enterprises who have not indicated that they were implementing CPFR, specifically with the reduction in the overall inventories, and the increase of gross sales in the companies adopting this practice.

Specifically in the retail sector environment, Büyüközkan & Vardaloğlu (2012) declared that this sector is characterized by intense pressure in market competition, dynamic products' portfolio, hundreds of different products by category, ever-changing customer requirements and being able to stand in a mass market. When considering that the giant retailers work together with their suppliers, each independent operation is a comprehensive structure, consisting of thousands of sub-processes. In short, the retail industry dynamism, and cooperative work, accompanied with the competitiveness of the sector, is one of a rare combination, in which a CPFR model is, hopefully, an expected work structure. Said structure integrates trading partners' internal and external information systems, proposing an assisting system for a more effective supply chain structure in the industry. The authors determine the factors that will support a better implementation of CPFR strategy in retail industry and analyze them using fuzzy cognitive map (FCM) approach. One of the most useful aspects of the FCM is its potential for use in decision making supporting a prediction tool (Kosko 1986). The authors proposed a CPFR model made up of three sub-systems, (1) namely as information sharing and system integration, (2) decision synchronization as people management and development, and (3) incentive alignment as the relationship management and trust building.

The model is presented as follows in Figure 4.1, where the relationships between the factors are presents as hypotheses.

Stemming from the 8 topics explained before (Hargous & Guitart Tarrés, 2022), there are 8 formative constructs that converge into the presented model.

Figure 4. 1 Relationships between topics



\* Source: own elaboration

There are 8 first order constructs, obtained directly from the analysis made in the literature review, and a second order construct based on a grouping of the topics (shown in green), identified as operational daily basis concepts. Hence, the “3PL participation in daily supply chain” (shown in blue) is composed by daily based relationships between the TPL company and processes that are normally done by them. Those concepts are “TPL participation in the supply chain optimization”, “TPL participation in Logistic Operations”, “TPL participation with vendors”, and “TPL participation with customers”. The variables to develop the different construct are reflected in Table 4.1 where the topics represent the constructs (except from the second order construct identified before), and the concepts represent the variables.

Table 4. 1 Topics and Cosntructs

Second Order Cosntruct	First Order Cosntruct	Item Definition	Item	Reference
TPL participation in daily SC	TPL participation in Logistic Operations	The TPL is essential to give a Good Customer Service.	TPLOP1	Sahay (2006) Bhatnagar et al. (1999)
		The TPL support the warehousing processes of the company.	TPLOP2	Baruffaldi et al (2019)
		The TPL support the freight processes of the company.	TPLOP3	Power et al. (2007)
		The TPL support the logistic coordination processes of the company.	TPLOP4	Chen et al. (2015) Hertz & Alfredsson (2003)
		The TPL support the inventory management processes of the company.	TPLOP5	Cheong (2004)
TPL participation in the supply chain optimization	TPL participation in the supply chain optimization	The TPL has total system integration with the company ERP.	TPLOCA1	Mortensen & Lemoine (2008) Sheikh & Rana (2011)
		The TPL has knowledge of the company inside operations.	TPLOCA2	Chen et al. (2011) Mellat-Parast & Spillan (2014)
		The TPL contribute with ideas and solutions for the business processes optimization.	TPLOCA3	Rollins et al. (2011)

	The TPL participates in the demand planning forecast of the company.	TPLOCA4	Min (2013)
	The TPL participates in the join demand forecasting with the Customer.	TPLRC1	Trentin (2011)
	The TPL generates purchase orders for the customer replenishment process.	TPLRC2	Graves et al. (2011)
TPL participation with customers	The TPL coordinates follow up meetings and activities within customer, the company and the Warehouse.	TPLRC3	Skjoett-Larsen (2000)
	The TPL has system integration with customers.	TPLRC4	Chow et al. (2007)
	The TPL has total visibility of inventory levels, demand forecast and goods movements in the whole chain.	TPLRC5	Daugherty et al. (2006) Holcomb et al. (2011) Liu & Kumar (2003) Simatupang et al. (2002)
TPL participation with vendors	The TPL participates in the negotiation with vendors.	TPLP1	Zhan-feng & Yong (2008)
	The TPL administrates the vendor management.	TPLP2	Ali et al. (2014)

First Order Cosntruct	Item Definition	Item	Reference
TPL participation in logistic strategy	The TPL participates and contribute in the company logistic strategy.	TPLEL1	Hong Bo et al. (2011)
	The TPL participates in the logistic relationship and logistic strategy with customers.	TPLEL2	Hong Bo et al. (2011)
	The TPL participates in the logistic strategy implementation.	TPLEL3	Hoi Yan Yeung et al. (2006) Stank et al. (1999)
	The TPL measures and generates periodic reporting for the logistic operations.	TPLEL4	Domingues et al. (2015)
TPL improves SC efficiency	Using a TPL benefits the supply chain management of the company	TPLSCE1	Zacharia et al. (2011)
	The TPL delivers value to SCM processes	TPLSCE2	Power et al. (2007)
Collaborative models improve SCM efficiency	VMI improves the delivery and inventory level efficiency in the supply chain	CMSCM1	Claassen et al. (2008)
	CPFR improves inventory levels, replenishment lead-time adn planning	CMSCM2	Claassen et al. (2008)
Implementing CPFR from	TPL has the know-how to implement CPFR	CPFRTPL1	Vivaldini et al. (2008)

TPL improve efficiency in SCM	TPL has the resources to implement CPFR	CPFRTPL2	Qureshi et al. (2008) Zacharia et al. (2011)
	TPL can offer CPFR methodology to many customers	CPFRTPL3	Vinay et al. (2009)
	TPL has the can train personnl to implement CPFR	CPFRTPL4	Sanches Flores & Primo (2018)
	TPL has the technical knowledge and capabilities to a system integration with multiple platforms	CPFRTPL5	Hanus (2013)

\* Source: own elaboration

A TPL company operates a distribution network with minimal control over supply and demand. The operation is characterized by three levels: a strategic level that includes the location and sizing of warehouses, a tactical level that determines the links between customers, warehouses and producers (Vendors) and an operational level that determines the size of the flows through the links at any given time (Armbruster et al., 2011). This flow can be characterized as a daily process where there are 4 different areas identified, the participation on the operations (Bolumole, 2003), the optimization of the processes (Lieb & Lieb, 2011), the participation with the customers (Goudarzi K., 2015), and the participation with the vendors (Zacharia et al., 2011). From this the following hypothesis can be explained.

**H1: A strong participation of the TPL in the daily supply chain processes, affects positively in the implementation of a CPFR with a TPL as and orchestrator.**

Business organizations require the service of TPL companies to outsource partially or totally their supply chain operations reducing the burden of logistics activities and achieve customer satisfaction and overall performance. This is, on one side, a need for some companies that don't have the capabilities to handle their own logistics, on the other side, improving their supply chain's efficiency.

Giri & Sarker (2017), present the idea of how the efficiency in the supply network can be reached through a TPL, and Burnette (2010), presents how the collaboration from a CPFR can also be reached through efficiency efforts; ergo the following hypothesis is presented.

**H2: A strong participation of the TPL in process of improving the efficiency of the supply chain, affects positively in the implementation of a CPFR with a TPL as and orchestrator.**

Taking in account what Keller & Daugherty (2001) present, about the existing collaboration between logistics operators and their respective customers, it is the first step towards an effective collaboration and efficiency relationship within companies and in their supply chains, ergo the following hypothesis can be presented.

**H3: The usage of collaborative models to improve the efficiency of the SCM, affects positively in the implementation of a CPFR with a TPL as and orchestrator.**

Kim, Yang, & Kim (2008) and Hertz & Alfredsson (2003) present different approaches to the participation of TPL in logistic strategy, not only from a logistic provider business perspective, but also, how it affects their new strategies towards their customers and to the market. Taking in account that implementing a CPFR system it is a strategic decision; the following hypothesis is presented.

**H4: The participation of the TPL in the logistic strategy, affects positively in the implementation of a CPFR with a TPL as and orchestrator.**

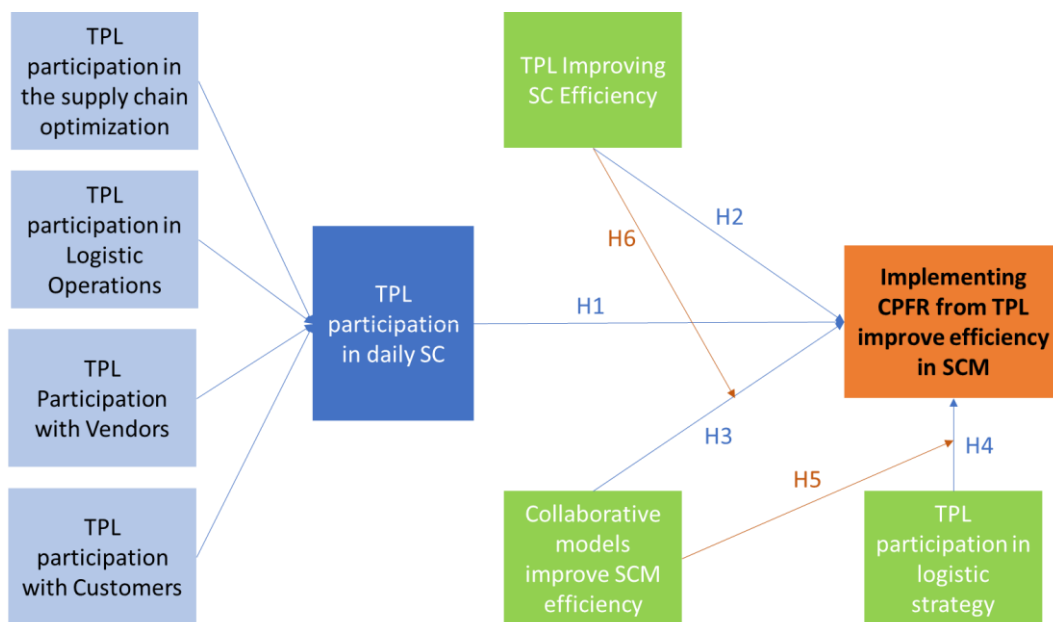
Implementing a collaborative system within a supply network must be part of the companies' business strategy. Since the goal of the present research is to understand implementation of a CPFR system from a TPL company, this would be affected by the process of looking for efficiency through collaborative tools. Ergo, the following two hypothesis are presented as moderator effects in the PLS model presented.

**H5: The relation between TPL participation in logistic strategy and the implementation of CPFR from TPL improving efficiency in SCM, is moderated by Collaborative models improve SCM efficiency.**

**H6: The relation between the Collaborative models improves SCM efficiency and the implementation of CPFR from TPL improving efficiency in SCM, is moderated by TPL Improving SC Efficiency.**

The relationships with the hypotheses among the model are represented as shown in Figure 4.2.

Figure 4. 2 Model with Hypotheses



\* Source: own elaboration



#### 4.4. Methodology

The purpose of this investigation is to have exploratory data about the implementation of a CPFR system through TPL companies as enablers, and to have enough information to run the model described in Figure 4.1.

In this sense, getting the detailed information to prove the presented model, a survey that reflects the different relationships among the topics was developed, but also the construction of these topics through the concepts. The survey to gather the needed information is presented in Appendix A.

The survey has 3 control variables, one regarding company size, two if they work or not with TPL companies, and third the seniority level of whomever is answering the survey. After the questions for said variables, there are 29 questions to respond. These questions are evaluated with a Likert Scale as Sepúlveda & Derpich (2014), Backus et al. (2016) and Nguyen & Notteboom (2016), among others, have used in evaluating their surveys' answers.

Another aspect of the survey to highlight is that the sample needs to contain companies within the target type. According to the criteria presented by Wang & Fan (1998), the author is taking a structure base sampling to launch the survey.

The authors used the database "SABI". SABI contains comprehensive information on companies in Spain and Portugal. It can be used to research individual companies, search for companies with specific profiles and for analysis. Some of the information that SABI contains are Company financials, such as, Financial strength indicators, Stock data for listed companies, Detailed corporate structures, Maps and cartographic analysis, among others. It is a database available for several universities and research companies.

Based in the database SABI, the authors structured a sample as follows:

- Active companies in Spain: from a total of 1.764.575 registered companies in Spain, the active companies were 898.923.
- Companies in industries that work with finished goods, excluding mining and extraction companies: taking in consideration that the CPFR implementation is made on Retailers and suppliers (Ireland & Crum, 2005), the sample comes down from 898.923 companies to 131.992.
- Companies with at least 50 employees, for medium size and big companies, as categorized by Anderson & Kindlon (2019), getting a final number for the sample of 4.517 companies.

The survey's results are 287 valid registers, being 6,35% from the sent surveys.

There is a 1 to 1 relation between the survey questions and each one of the items presented in Table 4.1, where each question got 287 registers which are presented in every item.

Furthermore, a relationship model based in the same structure presented by 8 grouped concepts is used for further researches, to validate data and analyzed with a Partial Least Squares (PLS). This is a structural modeling technique based in the variance of the variables instead of the covariance structure. It is oriented to analyze predictions of different relationships or phenomena's and has an exploratory character more than proof-like.

The PLS method demands significantly fewer requirements compared to that of covariance structure analyses, but nevertheless delivers consistent estimation results. This makes PLS a valuable tool for testing theories. Another asset of the PLS approach is its ability to deal with formative as well as reflective indicators, even within one structural equation model. This indicates that the PLS approach is appropriate for explorative analysis of structural equation models, too, thus offering a significant contribution to theory development (Götz et al., 2010).

The analysis method used to empirically contrast the proposed hypotheses was the structural equation model through the Partial Least Squares (PLS) technique (Gómez-Cedeño, 2014). This methodology has become one of the most important in multivariate analysis and its use has been extended to the field of SCM (Gimenez et al., 2005).

PLS is the most appropriate technique for this study since it is a tool that aims at causal-predictive analysis (Becker et al., 2012) in highly complex situations and little theoretical knowledge (Burgess & Singh, 2006).

The analysis of the mediation effects should be carried out when an independent variable, X, has an impact on a third variable, Z, which then influences the dependent variable, Y. Some authors point to bootstrapping resampling as the best option to test indirect effects. Based on the recommendations of Becker et al. (2012) a bootstrapping method was applied, specifically using the percentile method based on the work of Chin (2001), which consists of calculating a confidence interval for the mediator effect with a 95% and 99% confidence interval through a bootstrapping process of 5,000 subsamples.

## 4.5. Results

Related to internal consistency, the factor loadings of the items that make up the measurement scales were analyzed. There are authors such as Carmines & Zeller (1979) who recommend a value for factor loadings greater than or equal to 0.707 to be accepted as an indicator of a construct. However, other researchers such as Roldán & Sánchez-Franco, (2012) consider that this general rule should not be so rigid in the early stages of scale development (Chin, 1998), or when the scales are applied in new contexts not previously analyzed (Barclay et al., 1995), both conditions that are given in this work.

Since the theoretical model of this work contains multidimensional constructs (second order), in first place, the measurement of the individual reliability of each one of the items of the first order model was carried out. All the loads (loading) of the items were greater than 0.70, except for five of them (TPLOP4=0.674, TPLRC3=0.579, TPLRC4=0.610, TPLEL4=0.595 y CPFRTPL3=0.511) that presented lower loads and were removed from the instrument. For the item TPLOP2 with a loading of 0.696, it stays in the model, since it is a value close enough to 0.70, and the AVE and CR are within the acceptance tolerance (Urbach, 2010).

### 4.5.1. First Order Model Results

To evaluate the reliability of the measures (constructs) (see Table 4.2), the composite reliability (CR), the mean variance extracted (AVE) and the Cronbach Alpha (Chin, 1998) were calculated. Fornell et al. (1981) propose a threshold of 0.8 for CR, and 0.5 for AVE. Therefore, this measurement demonstrates that the first-order measurement model is internally consistent and reliable. For the item TPLOP2 with a loading of 0.696, it stays in the model, since it is a value close enough to 0.70, and the AVE and CR are in the acceptance tolerance (Urbach, 2010). Also, for formative construct models, Sarstedt et al., (2014) uses the Variance inflation factor (VIF), that is a measure of the amount of multicollinearity in a set of multiple regression variables, with a threshold of 3.3 (has to be lower than 3.3); this is also in Table 4.2.

Table 4.2 First-order measurement model evaluation

Second Order Cosntruct	First Order Cosntruct		Item	Loading	AVE	Crombach's Alpha	CR	VIF
TPL participation in daily SC	TPL participation in Logistic Operations	<b>TPLOP</b>	TPLOP1	0.771	0.582	0.761	0.847	1.44
			TPLOP2	0.696				1.365
			TPLOP3	0.768				1.489
			TPLOP4	-				-
			TPLOP5	0.812				1.594
	TPL participation in the supply chain optimization	<b>TPLOCA</b>	TPLOCA1	0.78	0.597	0.776	0.856	1.446
			TPLOCA2	0.734				1.468
			TPLOCA3	0.784				1.6
			TPLOCA4	0.793				1.612
	TPL participation with customers	<b>TPLRC</b>	TPLRC1	0.842	0.581	0.642	0.805	1.323
			TPLRC2	0.714				1.25
			TPLRC3	-				-
			TPLRC4	-				-
			TPLRC5	0.723				1-223
	TPL participation with vendors	<b>TPLP</b>	TPLP1	0.914	0.801	0.754	0.89	1.576
			TPLP2	0.875				1.576
		First Order Cosntruct	Item	Loading	AVE	Crombach's Alpha	CR	VIF
	TPL participation in logistic strategy	<b>TPLEL</b>	TPLEL1	0.807	0.531	0.699	0.817	1.618
TPLEL2			0.766	1.44				
TPLEL3			0.729	1.345				
TPLEL4			-	1.137				
TPL improves SC efficiency	<b>TPLSCE</b>	TPLSCE1	0.873	0.722	0.617	0.839	1.248	
		TPLSCE2	0.826				1.248	
Collaborative models improve SCM efficiency	<b>CMSCM</b>	CMSCM1	0.908	0.791	0.737	0.883	1.517	
		CMSCM2	0.871				1.517	
	<b>CPFRTPL</b>	CPFRTPL1	0.733	0.537	0.777	0.849	1.361	

Implementing CPFR from TPL improve efficiency in SCM	CPFRTP2	0.704			1.948
	CPFRTP3	-			1.16
	CPFRTP4	0.783			1.965
	CPFRTP5	0.882			3.287

\* Source: own elaboration

Discriminant validity (Barclay et al., 1995) assesses the degree to which a construct differs from the other constructs included in the same model. To assess discriminant validity, we first examined item cross-loads shown in Table 4.3.). This analysis showed that the load of each element is significantly higher in the construct to which it has been assigned, than in the other constructs of the model.

Table 4. 3 First-order model Cross-loads

	TPLSCE	TPLOP	TPLOCA	TPLCR	TPLP	TPLEL	CMSCM	CPFRTP
TPLEL1	0.807	0.619	0.458	0.503	0.518	0.506	0.490	0.514
TPLEL2	0.766	0.609	0.506	0.490	0.568	0.569	0.380	0.531
TPLEL3	0.729	0.507	0.467	0.463	0.426	0.491	0.355	0.501
TPLOCA1	0.580	0.780	0.383	0.430	0.554	0.504	0.283	0.519
TPLOCA2	0.434	0.734	0.464	0.405	0.379	0.356	0.383	0.380
TPLOCA3	0.624	0.784	0.477	0.495	0.488	0.472	0.407	0.450
TPLOCA4	0.610	0.793	0.520	0.480	0.459	0.435	0.410	0.472
TPLOP1	0.474	0.429	0.771	0.356	0.394	0.397	0.239	0.569
TPLOP2	0.377	0.359	0.696	0.329	0.329	0.311	0.188	0.432
TPLOP3	0.451	0.413	0.768	0.391	0.396	0.417	0.296	0.522
TPLOP5	0.547	0.584	0.812	0.468	0.504	0.494	0.424	0.586
TPLP1	0.580	0.580	0.482	0.914	0.516	0.508	0.529	0.534
TPLP2	0.511	0.461	0.427	0.875	0.464	0.426	0.475	0.447
TPLRC1	0.594	0.646	0.514	0.522	0.842	0.524	0.377	0.586
TPLRC2	0.503	0.319	0.364	0.335	0.714	0.441	0.282	0.400
TPLRC5	0.411	0.383	0.323	0.368	0.723	0.360	0.258	0.434
TPLSCE1	0.630	0.587	0.522	0.528	0.502	0.873	0.382	0.510

TPLSCE2	0.513	0.382	0.382	0.353	0.494	0.826	0.240	0.441
CMSCM1	0.473	0.441	0.359	0.538	0.389	0.347	0.908	0.395
CMSCM2	0.424	0.401	0.321	0.458	0.334	0.310	0.871	0.338
CPFRTPL1	0.569	0.512	0.819	0.405	0.485	0.485	0.318	0.733
CPFRTPL2	0.469	0.361	0.359	0.373	0.461	0.347	0.242	0.704
CPFRTPL4	0.573	0.513	0.463	0.482	0.545	0.466	0.363	0.783
CPFRTPL5	0.535	0.443	0.449	0.422	0.529	0.443	0.308	0.882

\* Source: own elaboration

In addition, a more rigorous method was applied to evaluate the discriminant validity; it consists of verifying that the square root of the AVE of each individual construct is greater than the correlation between such construct and any other construct. Table 4.4 shows the squared correlations between the constructs and the AVE values on the diagonal. All values on the diagonal exceed the correlations between squared constructs. Therefore, the study of discriminant validity is acceptable.

Table 4. 4 First order model Discriminant validity

	TPLSCE	TPLOP	TPLOCA	TPLCR	TPLP	TPLEL	CMSCM	CPFRTPL
TPLSCE	<b>0.850</b>							
TPLOP	0.537	<b>0.763</b>						
TPLOCA	0.578	0.592	<b>0.773</b>					
TPLCR	0.585	0.537	0.615	<b>0.762</b>				
TPLP	0.525	0.509	0.586	0.549	<b>0.895</b>			
TPLEL	0.676	0.612	0.734	0.666	0.612	<b>0.729</b>		
CMSCM	0.371	0.384	0.474	0.408	0.563	0.506	<b>0.889</b>	
CPFRTPL	0.562	0.697	0.595	0.633	0.551	0.682	0.414	<b>0.733</b>

\* Source: own elaboration

#### 4.5.2. Second Order Model Results

The second-order model was constructed using non-standardized latent variable values, after having eliminated the non-significant elements of the

measurement, when performing the first-order model test. Reliability and validity for the second-order model can also be measured in a similar manner to that of the first-order model.

Table 4.5 presents the factorial loads of all the constructs. All indicators contain loads greater than 0.70. As mentioned before, some researchers (Roldán & Sánchez-Franco, 2012; Barclay et al., 1995) consider that this empirical rule should not be so strict on exploratory scales or when applied in different contexts, so factorial loads equal to 0.5 or 0.6 can also be considered acceptable. In addition, the factorial load of these items does not affect the composite reliability of the construct, nor the variance extracted, nor the discriminant validity of the construct, as will be explained below, so it was decided to maintain them to preserve content validity. Furthermore, this study calculates the composite reliability (CR), the mean variance extracted (AVE) and the Cronbach Alpha. Table 4.5 also collects the CR, AVE and Cronbach Alpha values, showing that all the variables exceed the threshold of 0.8 for CR and 0.5 for AVE. In Table 4.5 appears a new construct, TPL Participation in Daily SC (TPLDSC), from the first order model, where the previous TPLOP, TPLOCA, TPLCR, TPLP constructs now are the items conforming TPLDSC.

*Table 4. 5 Second order measurement model evaluation*

Second Order Cosntruct		Item	Loading	t value	AVE	Crombach's Alpha	CR	VIF
TPL Participation in Daily SC	<b>TPLDSC</b>	TPLOP	0.821	45.205	0.673	0.838	0.892	1.721
		TPLOCA	0.846	43.506				2.083
		TPLCR	0.828	36.756				1.848
		TPLP	0.786	28.365				1.726
TPL participation in logistic strategy	<b>TPLEL</b>	TPLEL1	0.832	32.916	0.640	0.719	0.842	1.574
		TPLEL2	0.800	26.661				1.421
		TPLEL3	0.767	24.206				1.333
TPL improves SC efficiency	<b>TPLSCE</b>	TPLSCE1	0.870	2.009	0.722	0.617	0.839	1.248
		TPLSCE2	0.829	29.025				1.248
Collaborative models improve SCM efficiency	<b>CMSCM</b>	CMSCM1	0.904	38.811	0.791	0.737	0.884	1.517
		CMSCM2	0.875	29.937				1.517

Implementing CPFR from TPL improve efficiency in SCM	<b>CPFRTPL</b>	CPFRTPL1	0.748	28.230	0.623	0.797	0.868	1.342
		CPFRTPL2	0.714	18.334				1.946
		CPFRTPL4	0.798	27.915				1.965
		CPFRTPL5	0.887	65.968				3.210

\* Source: own elaboration

Discriminant validity for the second order model was evaluated in the same way as for the first order model, where the AVE of each individual construct is greater than the squared correlation between the other constructs. Table 4.6 shows that all diagonal values exceed the squared correlations between the constructs. Therefore, we conclude that the second order measurement scales have sufficient construct validity.

Table 4. 6 Second order model Discriminant validity

	<b>TPLSCE</b>	<b>TPLDSC</b>	<b>TPLEL</b>	<b>CMSCM</b>	<b>CPFRTPL</b>
TPLSCE	<b>0.850</b>				
TPLDSC	0.677	<b>0.820</b>			
TPLEL	0.653	0.778	<b>0.800</b>		
CMSCM	0.370	0.549	0.510	<b>0.890</b>	
CPFRTPL	0.560	0.755	0.648	0.395	<b>0.789</b>

\* Source: own elaboration

#### 4.5.3. Structural Model Results

Once the measurement model was confirmed, the hypotheses raised through the estimation of the structural model were contrasted. First, the predictive value of endogenous constructs was evaluated through the R2 value. This index varies between values 0 and 1 and the closer to 1, the greater the explained variance of the analyzed variable. Although, there is no consensus about the minimum level that this index must reach, Falk & Miller, (1992) recommend a minimum value of 0.1, which ensures that at least 10% of the variability of the construct is due to the model. The R2 values of the endogenous constructs used widely exceed this recommended minimum value, with



CPFRTPL presenting an R2 of 0.584. Therefore, the model has adequate predictive power.

To evaluate the predictive relevance of the model, the Stone-Geisser test was used. In this sense, the Q2 value of this test for the dependent variables was positive (CPFRTPL= 0.341). Therefore, it can be assumed that the dependent variables can predict the independent variables.

#### ***4.5.4. Direct Effects Results***

From the Hypotheses previously presented, there are 4 of them with direct effects from any independent construct to the dependent construct. In Table 4.7, there are presented the values for the Coefficient path value ( $\beta$ ) and the t value (t statistical value) from the bootstrapping process in SmartPLS. The different results are for different confidence intervals as shown in Table 4.7.

For the Hypothesis H1, the coefficient  $\beta=0.793$  (t-value=8.732;  $p<0.01$ ), meaning that, according to the surveyed, a strong participation of the TPL in the daily supply chain processes, affects positively in the implementation of a CPFRTPL with a TPL as and orchestrator.

For the Hypothesis H2, the coefficient  $\beta=0.073$  (t-value=0.575;  $p<0.3$ ), meaning that, according to the surveyed, a participation of the TPL in process of improving the efficiency of the supply chain, barely affects positively in the implementation of a CPFRTPL with a TPL as an orchestrator, but not strongly as H1, since the result of  $\beta$  is below the minimum accepted of 0.1, and it is only accepted with a confidence interval of 70%, so it is not a significant variable for the model.

For the Hypothesis H3, the coefficient  $\beta=-0.013$  (t-value=0.797;  $p<0.25$ ), meaning that, according to the surveyed, there is no significant proof that the usage of collaborative models to improve the efficiency of the SCM, affects positively in the implementation of a CPFRTPL with a TPL as and orchestrator.

For the Hypothesis H4, the coefficient  $\beta=0.269$  (t-value=1.839;  $p<0.05$ ), meaning that, according to the surveyed, the participation of the TPL in the logistic strategy, affects positively in the implementation of a CPFRTPL with a TPL as and orchestrator.

Table 4. 7 Direct effect Results Hypotheses

	Coefficient	t value
<b>H1:</b> TPL Participation in Daily SC -> Implementing CPFR from TPL improve Efficiency in SCM	0.793	8.732 *
<b>H2:</b> TPL Improves SC Efficiency -> Implementing CPFR from TPL improve Efficiency in SCM	0.073	0.575 ****
<b>H3:</b> Collaborative Models improves SCM Efficiency -> Implementing CPFR from TPL improve Efficiency in SCM	-0.013	0.797 ***
<b>H4:</b> TPL participation in Logistic Strategy -> Implementing CPFR from TPL improve Efficiency in SCM	0.269	1.839 **

Statistic significance level:

\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.25$ ; \*\*\*\*  $p < 0.3$

\* Source: own elaboration

#### 4.5.5. Mediators Effects Results

The hypotheses H5 and H6 propose indirect effects. Those are moderating effects form one construct to another. In this case, the results are presented in Table 4.8 with the corresponding Coefficient path value ( $\beta$ ) and the confidence interval from the bootstrapping process in SmartPLS.

Table 4. 8 Indirect effect Results Hypotheses at Confidence Intervals of 95% and 90%

	Coefficient	Confidence Interval 95%	Confidence Interval 90%	Results
<b>H5:</b> Collaborative Models improves SCM Efficiency -> TPL participation in logistic strategy -> Implementing CPFR from TPL improve Efficiency in SCM	0.137	-0.036 0.139	0.001 0.108	Significant at 90%
<b>H6:</b> TPL Improving SC Efficiency -> Collaborative Models improves SCM	0.101	-0.182 -0.023	-0.151 -0.06	Significant at 95% and 90%

Efficiency -> Implementing CPFR from TPL improve Efficiency in SCM				
--	--	--	--	--

\* Source: own elaboration

The results for H5 and H6 show that both moderating effects are significant at the shown Confidence Intervals. For H5 indicates that improving the SCM efficiency through collaborative models has a positive moderating effect while a TPL participates in the logistic strategy when implementing CPFR by a TPL. On the other hand, for H6 means that improving the SC efficiency has a positive moderating effect in the relationship between improving the SCM efficiency through collaborative models when a CPFR is implemented by a TPL.

It can be expected that a moderative effect can be less significant than a direct effect, and this is proven in this model, where both moderation effects are slightly over 0.1.

As a summary the following Table 4.9 is presented with the hypotheses results.

*Table 4. 9 Hypotheses Results*

Hypothesis	Result of the Hypothesis
H1: TPLDSC -> CPFRTPL	Accepted
H2: TPLSCE -> CPFRTPL	Rejected
H3: CMSCM -> CPFRTPL	Rejected
H4: TPLEL -> CPFRTPL	Accepted
H5: CMSCM -> TPLEL -> CPFRTPL	Accepted
H6: TPLSCE -> CMSCM -> CPFRTPL	Accepted

\* Source: own elaboration

All the results presented in this research cannot be contrasted with previous analysis, since, it is of the authors' knowledge, there is no previous exploratory analysis like the one presented. There have been several PLS analysis in TPL companies before, but not as exploratory to introduce new systems (as the

presented in this research), nor any other research to present an implementation of an horizontal collaboration system with a TPL as enabler or orchestrator.

#### 4.6. Conclusions

Despite the number of researches presenting the relationship between TPL companies and their customers, and seeing an evolution of those relationships, and even the studies presenting them, there is no research presenting the TPL as an enabler of a sophisticated collaboration tool or system as CPFR. In fact, some researches present the idea that TPL companies should provide more possibilities and services into the market and become the new revolution of the logistic industry as Changsu et al. (2008) and Hertz & Alfredsson (2003).

Considering Hargous & Guitart Tarrés (2022) work, where looking for the TPL companies as an enabler/orchestrator of a collaborative methodology such as CPFR, a gap is encountered, where understanding the relationship among the different factors of the SCM. The TPL companies and the implementation of a CPFR and the main objective of this research came as the need to analyze the interaction of the 8 factors in a model applying PLS technique.

Since according to the authors' knowledge there is no literature taking all this factors in consideration, a survey is developed and conducted. The gathered information forms relationship model presented and developed through PLS. There are 6 hypotheses presented, but only 4 of them accepted. Since it is the first time the 8 factors presented by Hargous & Guitart Tarrés (2022) in their previous work are related together, there might be the possibility to get more data and analyze with other data sets to see if the hypotheses behave in a different manner.

With the actual results, there can be sustained that the main factor to successfully implement a CPFR with a TPL as an orchestrator is the daily participation of the TPL in the Supply Chain, meaning that the TPL company needs to have an active participation on the relationship with Customers, Vendors, in logistic operations and in the supply chain optimization. These four factors are key for the success of this implementation. With a minor strength but still as a positive impact is the participation of the TPL company in the logistic strategy.

The other 2 factors, TPL Improving SC Efficiency and Collaborative models improve SCM efficiency, have not an important incidence in the model.

Also, there were 2 factors presented as a moderate effect in the model. Both were proven with a positive incidence, but since H2 and H3 are not relevant, the effect of H6 over H3 has no effect in the model. This leaves the model with only 1 moderate effect useful, that implies that the participation of the TPL company in the strategy helps in the CPFR implementation, and the collaborative models to improve the SCM impacts positively on this.

This model development in PLS proves that the information gathered in the survey is useful to understand the possibility to implement a CPFMR with a TPL company as orchestrator, but also needs to be proven true with a practical implementation. For future research it would be very useful to find a TPL company that effectively implements, or at least participates in a CPFMR methodology for one or more customers.

As a final comment, regarding the main objective of this research, to analyze the interaction of the 8 factors in a model applying PLS technique, they have been reached, by proposing a given model with its own hypotheses, based on interaction of the 8 factors described previously on this document.

Since the present analysis is based on the answers of professionals in Spaniard companies, the results of the same analysis could be different within a market where the TPL companies are chosen not only in a cost base as the majority cases in Spain, but as a strategic partner to improve efficiency and enable new ways to serve the customers in the whole supply chain network.

From a managerial point of view, it is interesting that the survey results analyzed on a PLS model show that a collaborative system should have a positive impact into the overall SCM efficiency, when it is implemented with a TPL company as an orchestrator. The fact that the TPL companies are expert in daily logistic operations positively affect this scenario. TPL companies and their customers could have benefits on this implementation, but of course, there is not empirical proof on this matter since, according to the authors knowledge, there is no literature about this possibility.

# *CHAPTER V*





## 5. Blue Ocean Strategy applied to Third Party Logistics

### **5.1. Abstract**

In the world market, competitiveness has been widely known as one of the most used strategies to excel in the system. However, and in recent years, it has been shown that there is an alternative (blue ocean) strategy that allows other suppliers to leave direct competition and they focus on being a source of innovation.

On the other hand, in Spain, the logistics sector has a significant growth, with an increase in income that increases every year, but, in the same way, this sector is having difficulties to fulfill its responsibilities on time, which is why operators Outsourced logistics are shown as one of the most viable options to fulfill the responsibilities of the logistics sector.

#### *Objective*

In order to highlight the benefits of this alternative strategy, this work answer the research question: What is the relationship of implementing the blue ocean strategy and the operation of third party logistics?

#### *Methodology*

Systematic review, which includes quantitative and qualitative studies, and observational analyzes, published in Spanish, English, and Portuguese, which are related to the search terms: blue ocean strategy, outsourced logistics operators, or supply Chain. After the systematic review, there is a content analysis of the selected research papers.

#### *Results*

The literature review coincides with the fact that using the blue ocean strategy is favorable for the growth of the company and to avoid the competition and focus on creating innovative products and increasing your scope or the number of customers you are targeting. Although, there are a very few articles that found a direct relationship between companies with outsourced logistics systems and the application of the blue ocean.

It is concluded that it is necessary to delve into this issue since there are broad advantages in implementing the blue ocean strategy but little scientific information to justify it. This opens an interesting path for future research on this subject.

## 5.2. Introduction

The business operations in global logistic was worth almost 9 trillion euros (Mazareanu, 2021) in 2020 with a 3.4% growth in global transportation (ground, seas and air) in 2020 (Globenewswire, 2021).

The logistics sector in Spain has shown one of the greatest growth despite the COVID-19 pandemic; by 2020, it exceeded the 2019 records by 20%, reaching a contracting area of up to 1,793,000 m<sup>2</sup> and having an approximated Income of 2.3 billion euros for logistics operators as such (Otero & Laborda, 2021). This strong growth in the business continues to bring new companies and encourages increased investment in technology and infrastructure as well as delivery point networks.

Both, in Spain and in the rest of the world, business customers and other interested parties demand logistics operations with higher performance in environmental, social and economic areas, and with a responsible management of products, processes and services. Supply chain management enables integration between the customer base, redistribution, and the internal activities of companies supply; therefore, these supply chain practices greatly influence organizational performance, sustainability and economy for all, external and internal parts of a company (Bastas & Liyanage, 2018).

The general industry, especially logistics, is diverting processes, generating a surplus of new technologies usage and market guidelines, that allow them to be successful in the entire distribution process, from developing digitization, to having synchronicity. This generates a possible new scenario for the logistics sector where is room is created for a blue ocean strategy; this makes it clear that competition must be put aside and companies must seek to be innovative searching to fulfill unmet demands by customers (Rey et al., 2020). Meaning, the growth of the logistics sector is causing the creation of new markets and innovation patterns, to be able to satisfy all the business services that are required, being able to conclude that logistic operations fit perfectly within the blue ocean strategy.

Business services provided by business partners effectively reduce information asymmetries and risk management difficulties associated with minority partners, small and medium-sized companies. As business partners, the logistics sector interacts directly with the supplying company and the end consumer. The logistic partners know more about what they want, the value of the product, and the market to be reached by them. In recent years, those in charge of making

this connection are the third party logistic or 3PL, which have an increasingly important role in supply chain operations, and alignments of constraints for SMEs (Hua et al., 2021).

As Samson (2020) wrote, many operations failed before they had reached a relatively mature stability by the end of 2010. During the current pandemic, these supply centers and many other operations have been under a lot of stress. That has placed them in a new set of challenges. From this last instance the operational working conditions and the management of the supply chain, have arisen new topics that deserve to be investigated and especially to have a professional and theoretical practical attention.

Consistent with this, Samson & Kalchschmidt (2019) showed that logistic operations benefit greatly from theoretical applications developed in another field, and from obtaining new knowledge through theoretical lenses. However, they emphasize that operations management needs better research methods and more precise theory depending on the operating activities. What is fundamental for these, and other organizations and economies must be better theorized, also emphasizing that there is still more time for a wealth of theory and perspectives to occur with research methods that provide relevant knowledge about for the supply chains.

Aware of this, and of the great advantages that the blue ocean strategy has shown to have, the objective of this document is to **carry out a review of the literature regarding the blue ocean strategy applied or used by third party logistic companies.**

### **5.3. Theoretical Framework**

#### ***5.3.1. Blue Ocean Strategy***

This strategy suggests that: an organization should create new demand in an undeniable market space, or "blue ocean", rather than directly competing with other suppliers in the existing industry where it participates. Therefore, the cornerstone of Blue Ocean's strategy is that innovation is value (Bourletidis, 2014). So, success is not about fighting for a larger portion of the existing pie (market), but often having a smaller and smaller portion, and thus having a large economic market for everyone (Denning, 2017).

##### ***5.3.1.1. History***

The Blue Ocean Strategy, or BOS, emerged in the 2000s, specifically in 2005, the year in which the literary work written by W. Chan Kim and Rénee Mauborgne was published, professors from a renowned business school INSEAD (Madsen & Slåtten, 2019). As the authors themselves mention, even though the term "blue oceans" is new, its existence is not, that is, blue oceans have always been a feature of business life, both past and present.

For example, looking back only 30 years, the number of unknown industries and those that arose was very large, the same happens nowadays and going forward, it is unknown the number of industries that will exist in 30 years, therefore the Industries never stop, they are constantly evolving and improving, markets develop, and the ability to create new industries is underestimated, there is an ocean for everyone (W. C. Kim & Mauborgne, 2005).

This copy of (W. C. Kim & Mauborgne, 2005) signified a great revolution for what was stated in said book, since these authors did not propose a division of world markets, but rather to create new organizations that would generate new frontiers, opportunities, growth and jobs. The strategy proposed by these authors was very well received, which caused more than 4 million copies sold, and translations in 44 different languages; still being sold 12 years after the first publication, the authors of the strategy made a second publication regarding the subject but from the experience of all those organizations and governments that implemented this strategy (Denning, 2017). +

##### ***5.3.1.2. Blue and Red Oceans***

Just as the concept of blue oceans exists, the concept of red ocean also appears, which can be said is the antithesis of what was formulated by (W. C. Kim & Mauborgne, 2005). Said strategy (red ocean) defines the market as clearly aggressive spaces, where the guideline strategies are essential and very effective

to survive within this red ocean; it is given a concept of "red" because the borders and rules of the game are defined and known among all the existing industries in the market as such, but, with an aggressive field, similar to a shark battle (Moncada Quintero, David Andrés; Ángel Salazar, 2019).

Although the red ocean strategy seems a heartbreaking panorama, large companies are embraced by it and seem to defend them, below, Table 5.1) an impartial comparison of these strategies is presented:

*Table 5. 1 Comparison of market strategies*

<b>Red Ocean Strategy</b>	<b>Blue Ocean Strategy</b>
They battle to defend their company	It has its objective focused on new potential markets
It is allowed to copy products and services	Establish market research and consumer needs
The value of the product offered can be reduced to have a greater demand	Seeks to satisfy expectations about its products
<b>They prefer to be in high competition</b>	Seeks a sustained evolution with products that may be more interesting for consumers
	<b>They prefer to have innovation</b>

\*Source: Adapted from (YARAD et al., 2019)

In both strategies, the business vision is important, with emphasis on the effort either for innovation, or for the competition, therefore, regardless of the strategy, it is recommended to have a formula capable of raising business intelligence (Geografi, 2019).

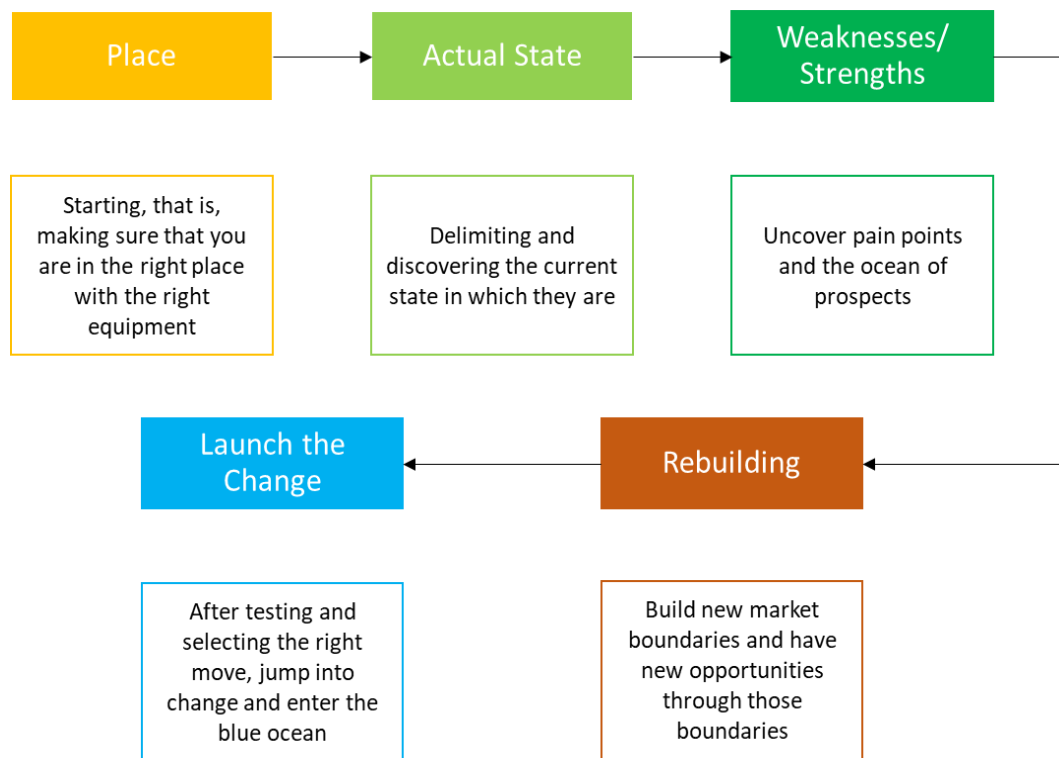
### ***5.3.1.3. Blue Ocean Strategy Approaches***

There are basic and key components to be successful applying this strategy, the first is the change of mentality to be able to expand horizons, the second is to use practical tools to be able to demonstrate new commercially attractive offers, and finally, to have a humanistic process, which inspires trust in the people who will drive the process. The latter is the one with the greatest focus,

since it is essential for the management to have a corporate performance oriented to blue ocean, and this performance is the result achieved by an individual or a group of individuals working in an organization (Nasrollahzadeh et al., 2014a).

In addition to the basic components to be successful from the strategy, (W. C. Kim & Mauborgne, 2005) have suggested steps to follow and systematically reproduce the success that said strategy has shown (Figure 5.1).

Figure 5. 1 Five-step process to systematically reproduce strategic triumphs



\*Source: Adapted from (Denning, 2017)

### 5.3.2. Supply Chain Management

The supply chain is a formation of companies working together to leverage their strategic position and improve operational efficiency, including partnering with other companies in different relationship chains, resulting in downstream benefits for customers (Foster, 2008). There is a constant transformation in the management of the supply chain, such as the "circular supply" or integration of circular thinking where the management of the supply chain and its industrial

and natural ecosystems are surrounded with the aim of reducing waste to zero. A "sustainable supply" or green supply chain has also been sought, where the recovery of value in different supply chains with associated companies is allowed and therefore achieve a higher level of supply chain circularity (Zhang et al., 2021).

Supply chain management describes a set of logistics and production processes with the ultimate goal of delivering a product to the customer, the activities that are included within the supply chain range from obtaining materials to transforming the product and finally placement in the market, there are great advantages when good management is carried out in the supply chain, which are described in Table 5.2.

*Table 5. 2 Advantages of proper supply chain management*

<b>Negotiation efficiency</b>
With proper management in the supply chain, there is the possibility of bringing in new technologies, and even exchanging information with different suppliers, which increases effective negotiation.
<b>Control of suppliers</b>
The supply chain can access a greater number of potential suppliers, and an even greater number of quick offers, in a simple and automated way, which increases the control of supplier management
<b>Cost reduction.</b>
Supply chain management has been shown to decrease 20-30% as operating costs are dramatically reduced.
<b>Management improvements.</b>
The online information of the supplies allows to see the needs that the production has, and optimizes the storage management, improves the delivery dates, reduces the production deadlines and shipment dates, which means that there is a greater real capacity to react to a possible emergency or an increase in market demand

\*Source: adapted from (Manrique, M; Teves, J; Taco, A; Flores, 2019)

### ***5.3.2.1. Difficulties or failures in the Supply Chain***

There are logistic problems that have accompanied the Supply Chain system for a long time, these problems complicate the effectiveness of the supply chain and force buyers to look for multiple external options, such as operators and different combined means of transport that end up affecting the supply chain even more than it already was. Among the failures that the supply chain has, it can be encountered:

#### **5.3.2.1.1. Supply Interruption**

It is one of the main difficulties or failures of the supply Chain system since it is at the beginning of the supply chain, as explained by (Okeagu et al., 2021), the manufacturers of materials turn out to be the most problematic since they sometimes have interruptions that can cause the entire supply chain to close. One of the main solutions to this problem is to diversify the distribution of raw materials, thus reducing the probability of interrupting the rest of the supply chain when a single manufacturer for outsider reasons decides to stop manufacturing.

#### **5.3.2.1.2. Lack of Visibility**

This is one of the logistics problems that has more frequently taken place due to the accelerated growth of companies. It is believed that approximately half of organizations start their operation blindly, this growth makes them start looking for a quick way to improve their logistics, which ends up generating insufficient collaboration, ignorance of real consumer demand, poor communication, and lack of autonomy (Business School, 2018).

#### **5.3.2.1.3. The “Phantom” Demand**

In the supply chain there is a problem called phantom demand, which means that warehouses, retail sites, and other non-individual consumers place larger orders than they really require, as explained by (Okeagu et al., 2021). This happens because sellers are expecting that in the middle of a crisis those orders will be used, and then, once they satisfy their demand, they cancel the orders, causing an illusory increase in demand, which collapses the supply chain and especially causes resources to be reallocated unnecessarily.

### ***5.3.3. Third Party Logistics***

Outsourcing logistics is a general trend of a company's value chain activities. The changing scenario of outsourcing has made new players appear, especially third party logistic or 3PL. It has been proven that over the past two decades,



third party logistic service provider industry has drastically changed logistics; In order to be successful in today's competitive environment, 3PLs strive to develop close and mutually beneficial long-term relationships with customers and not simply be an outsourcing option (Núñez-Carballosa & Guitart-Tarrés, 2011).

Thus, according to (Marasco, 2008), the 3PLs involve the use of external companies to perform logistics functions that have traditionally been performed within an organization. The functions performed by the 3PL come to encompass the entire logistics process or the activities selected within this process, and sometimes it manages to perform all companies' logistics functions, which includes any form of subcontracting of logistics activities carried out outside.

On the other hand, (Liu & Lyons, 2011) claim that 3PL providers offer companies the opportunity to improve customer service, respond to competition and divest themselves of their assets. Many 3PL providers have expanded their activities to provide a range of services including warehousing, distribution, freight forwarding and manufacturing, as well as increasing the multiplicity of services. Competition among 3PL providers has also increased, but very few large manufacturers specifically use 3PL providers to apply in their internal logistic operations, or as buyers or sellers under contract.

The 3PL logistics solutions allow companies to increase the capacities on their supply chain without having to invest their own resources. However, not all companies are aware when they need a third party logistic operator, then the Figure 5.2 shows the reasons why a company should look for a 3PL.

Figure 5. 2 Reasons to seek outsourcing

They conduct low volume operations	High operating costs	Difficulty to have efficient logistics	Expansion in unknown sectors	Impairments in service
When the operations are not high enough, it is more favorable to share resources that are being underutilized instead of having to do it individually, shared resources make it a logistics operation in a natural way	Generally, some companies need to rent warehouses, personnel, fleets and other services that become expensive. The policies of salaries and fleet management, in general, integrate these costs, therefore it is more viable to look for an outsourced logistics operator	Some companies do not have the human or technological resources and lack the capacity to carry out adequate logistics management on their own, for which they must incur a third party.	The management of subsidiaries relational operations is linked to business growth, therefore, when a company must generate a new operation, it is better to go to an expert in that area who is going to open it so as not to absorb the learning curve at startup .	On many occasions, because it is cost effective, it goes to the quality of the service, when a third party is hired it is found that there are cost advantages and additionally efficiency that increases the quality of their services

\*Source: adapted from (Claves Para Evaluar La Tercerización de La Logística | El Financiero, n.d.).

## 5.4. Methodology

### 5.4.1. Research question development

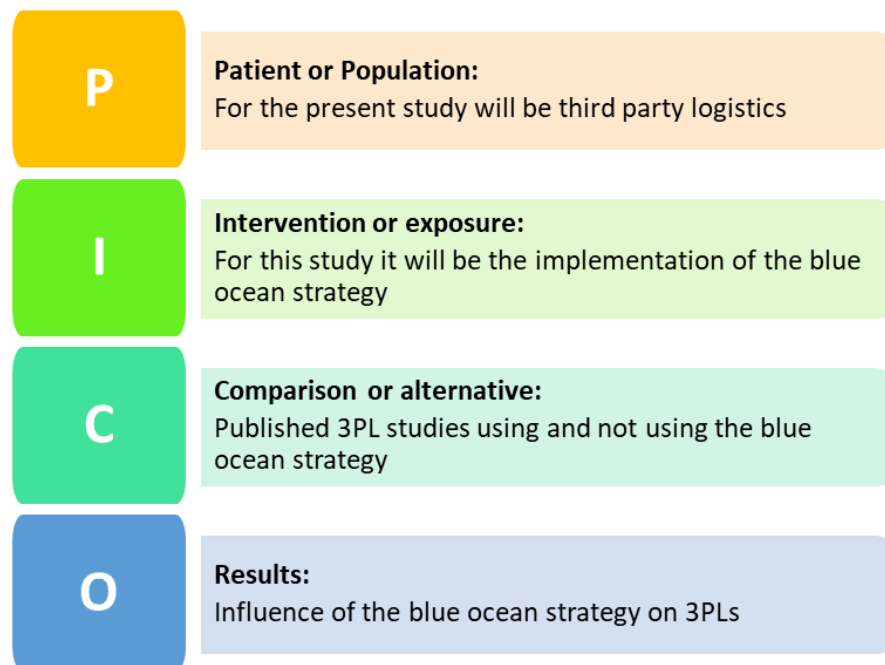
A research question is the question on which the study focuses, the question must be clear, that is, it does not need an additional, focused explanation, which means that it is precise enough to be answered throughout the study, concise and complex, where the answer is not either a yes or a no, and debatable, that is, the possible answers to the question are open to debate (Folgueiras, 2020).

To be focused on the expected results, a guiding question for the research must be made clear. The PICO strategy, is a strategy widely used in scientific literature and consists of following a series of steps to develop a clinical question (José María Carrión-Pérez et al., 2020). In Figure 5.3 you can see the representation of the PICO strategy.

Once the PICO components had been identified, the guiding question of the literature review was formulated:

**What is the relationship of implementing the blue ocean strategy and the operation of third party logistics?**

Figure 5. 3 PICO strategy applied to the review



\* Source: own elaboration

### ***5.4.2. Type of Study***

The present study is, first, a systematic review of the literature, in charge of recovering writings, articles, or bibliographic references. The articles that carry out literature reviews are widely accepted, since it fulfills the objective of justifying a general question with a detailed study and with a critical use of previously published studies (Guirao-Goris, 2015). As a second step, there is a content analysis of the selected research papers from the systematic review.

### ***5.4.3. Inclusion and exclusion criteria***

The inclusion and exclusion criteria for the selection of articles in this systematic review are shown in Table 5.3.

*Table 5. 3 Inclusion and exclusion criteria for articles*

<b>Inclusion criteria</b>
Quantitative studies
Qualitative studies
Spanish and English language studies
Bibliographic reviews
Observational analysis
<b>Exclusion criteria</b>
Articles that are not related to the blue ocean strategy.
Articles that did not mention 3PL.

\* Source: own elaboration

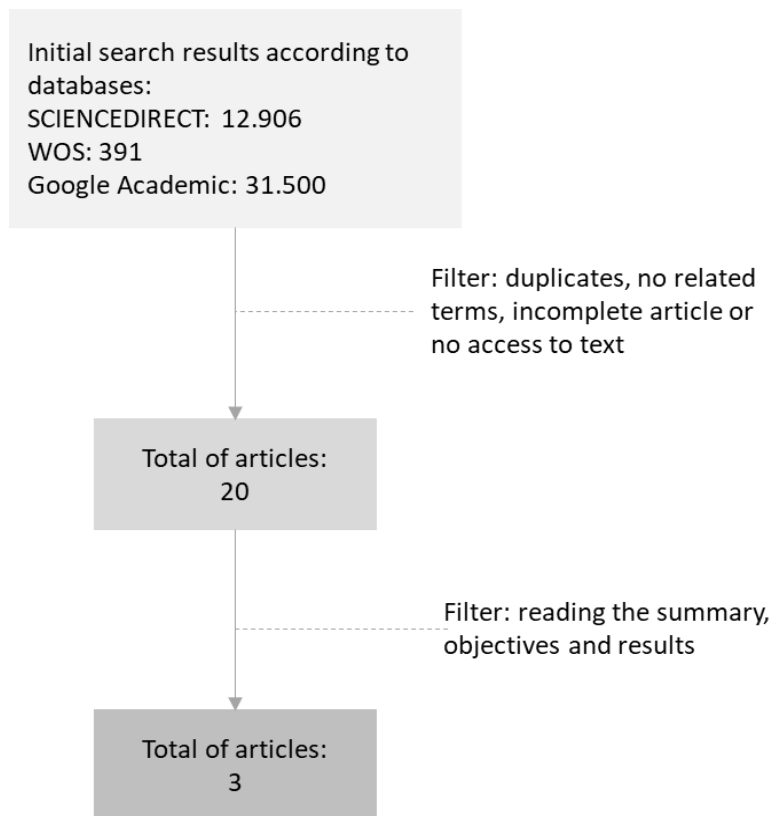
### ***5.4.4. Literature Search***

The present systematic review of the literature has a methodology based on a systematic search for evidence, it sought to cover as much information as possible about the subject, and then correlate the studies with the research question.

The present search was carried out during the second half of 2021, all published studies regarding the search terms were obtained, and later they were refined to collect truly important information regarding the subject.

For this research, the databases ScienceDirect, Web of Science, EBSCO, sCieLo, Lilacs, and Google Scholar were searched. Search terms: Blue Ocean Strategy, External Logistics, 3PL, Outsourced Logistics, Supply Chain. In Figure 5.4, a flow chart used to search for results with the total number of articles selected for the present systematic review of the literature can be seen.

Figure 5. 4 Literature search and filters



\* Source: own elaboration

Here is Table 5.4, with the list of the 20 analyzed papers and the 3 articles that accomplish the criteria highlighted.

Table 5. 4 List of 20 analyzed articles

Title	Author, Year
<b>Impact of Blue Ocean Strategy on Organizational Performance: A literature review toward implementation logic</b>	Alam & Islam (2017)
<b>A strategy for third-party logistics systems: A case analysis using the blue ocean strategy</b>	Kim et al. (2008)
<b>The role of supply chain finance in third-party logistics industry: A case study from China</b>	Li & Chen (2018)
Location Independent Manufacturing – Case-based Blue Ocean Strategy	Lohtander et al. (2017)
Applying the Principles of Blue Ocean Strategy in Supply Chain Management on Corporate Performance	Nasrollahzadeh et al. (2014)
Estrategia del Océano Azul para el sector portuario (sincromodalidad y digitalización)	Ortiz et al. (2020)
El direccionamiento estratégico, sobre la mirada de un océano rojo agresivo	Andrés et al. (2019)
Operations/supply chain management in a new world context	Samson (2020)
Collaborative logistics pickup and delivery problem with eco-packages based on time–space network	Wang et al. (2021)
Trends in third party logistics – the past, the present & the future	Premkumar et al. (2020)
Responsive supply chain: A competitive strategy in a networked economy	Gunasekaran et al. (2008)
Impact of COVID-19 on logistics systems and disruptions in food supply chain	Singh et al. (2020)
Blockchain technology and its relationships to sustainable supply chain management	Saberri et al. (2018)
An analysis of third-party logistics performance and service provision	Liu & Lyons (2011)

A novel technique for evaluating and selecting logistics service providers based on the logistics resource view	Alkhatib et al. (2015)
Flexibility and quality in logistics and relationships	Yu et al. (2017)
An integrated framework for lean manufacturing in relation with blue ocean manufacturing—A case study	Sadiq et al. (2021)
Analysis of a multi-echelon supply chain problem using revised multi-choice goal programming approach	Kayvanfar et al. (2018)
Improving supply chain integration using a workload control concept and web-functionality	Stevenson & Hendry (2007)
Sustainable Management of the Supply Chain Based on Fuzzy Logic	Barcellos de Paula et al. (2021)

\* Source: own elaboration

#### ***5.4.5. Limitations***

After an exhaustive search of articles, it was found that there is minimal information and documentation regarding third party logistics companies that implement the blue ocean strategy. In fact, implementing the blue ocean strategy in logistics companies is still scarce, therefore, there are enough limitations to carry out an in-depth bibliographic analysis since analytical observational studies, and even a literature review remains rare. In the same way, the study is not carried out on population, and the copyrights of the articles studied are duly respected, for this reason there is no limitation in the use of said articles.

## 5.5. Results

After filtering the total articles by term, incomplete articles or articles that did not allow access to the text, 20 possibly eligible articles were found, of these, it was found that the vast majority were published from 2017 onwards, 70% (14 articles), have a publication within these years. 2021, is the year with the largest selected publications, with five articles, from 2015 to 2008 only three selectable articles were found, and between 2007 and 2008 three articles were found, one of them is selected for representative analysis.

It was found that 50% of these potential articles to be selected were case studies or analysis of companies that have decided to apply either the blue ocean strategy, or are outsourced logistics companies, 30% (6 articles) are systematic reviews of the literature related to supply chain, 3PL or blue ocean strategies, and the remaining 20% are simulation articles, that is, articles that select a company or a situation and simulate its projection in the blue ocean strategy or improvement strategies.

It is important to emphasize that when conducting the search and classification of the articles for the systematic literature review, only three articles or case studies were found that were consistent with the objective of the present study. However, it is important to emphasize some opinions of other authors regarding the blue ocean strategy and the supply chain.

The study by (Wang, Y; Peng, S; Guan, X; Fan, J; Wang, Z; Wang, 2021) seeks to evaluate the problems of logistics networks in the specific case of ecological packaging that replaces traditional paper packaging. The system as such, showed problems not with the packaging, but problems with the moment of collection and delivery of packages. The study concludes that the best solution for this problem is to create a collaborative commercial operation with logistics transport companies, especially those companies that handle fast deliveries and thus improve resources and reduce costs. The study does not mention outsourced companies, however when proposing alliances with logistics companies, it can be deduced that it seeks that the company does not compete with logistics operators but collaborates with them, which is congruent with the blue ocean strategy.

(Lohtander, Mika; Aholainen, Antti; Volotinen, J; Peltokoski, M; Ratava, 2017) describe that business environments, and especially manufacturing environments, are turbulent and constantly evolving. Therefore, they must be flexible companies with better mobility and successful production speed,



therefore, benefit from a blue ocean strategy significantly increases the companies' competitiveness.

### ***Article 1***

The first article to analyze, found in the literature review, is titled " A strategy for third-party logistics systems: A case analysis using the blue ocean strategy", said article is the most similar study found with the research question that seeks to resolve in the present systematic review, by the authors (C. Kim et al., 2008). The objective was to evaluate an external or third party logistics provider (3PL) from South Korea, and the competitive advantage that comes after moving to a blue ocean through advanced communication technologies that its competitors do not have.

The study explains that the company studied by them is dedicated to offering third party logistics services, they even offer the same services as other logistics companies, product inspection, storage, product selection and shipping, and until now the studied company belongs to a great red ocean. However, this company differs from other companies since it uses radio frequency identification in each of its processes. Radio frequency allows scanning a barcode with inventory verification in real time, and thus calculating the Stock missing, and avoid the inaccurate inventory problems that other competitors have. The study showed that the company ranks ninth among the largest logistics information service providers in South Korea, it also has the highest growth rate per year, which represents 24%, and a lower investment cost than the rest of the companies compared.

At the end, the authors of the study agree that the studied company developed a ubiquitous business model among clients of the existing logistics market. Additionally, it managed to have an expansion of global electronic commerce, which generates infinite competition that will allow multiple Companies to find a new engine of growth. This is only possible when the guidance provided by the Blue Ocean Strategy is followed.

### ***Article 2***

Another analyzed study is the one carried out by (Li & Chen, 2018) entitled " The role of supply chain finance in third-party logistics industry: a case study from China". The objective of this study was to determine the role of the supply chain in the process to obtain a competitive advantage from third party logistics companies. While it is true, the study focuses on the importance of financing

supply chains, so that the practices of outsourced logistics companies improve their financial performance and have a sustainable competitive advantage.

The study also shows that outsourced companies can generate and maintain competitive advantages if they explore and exploit the market, that is, that 3PL companies can obtain a competitive advantage when they have strategies different from those of their competitors and connect with the roles that could play in a supply chain for their clients. The study shows that the severe competition in outsourced companies forces them to specialize in something particular, or to seek to diversify opportunities in a blue ocean, in order to expand their participation throughout the supply chain.

### ***Article 3***

The last article studied is entitled "Impact of Blue Ocean Strategy on Organizational Performance: A Literature Review Toward Implementation Logic", developed by (Alam, Samsul; Islam, 2017). The study is a review of the literature which seeks to discover the impact on the goals of organizations when they implement the blue ocean strategy and compare the performance against other organizations that do not.

The study shows that applying the blue ocean strategy has great benefits for the industry, be it for-profit or non-profit, even for public sectors. In theory, the blue ocean strategy seeks to break the cost of value tradeoff, by reducing competitive factors and increasing factors that have never been offered, what they come to call "value innovation". The study showed that organizations that practice this strategy have systematic tools and frameworks to outperform the competition and generate more spaces for markets. The study also mentions that, according to the literature studied, the blue ocean strategy aligns value, profits and people, so that the organization aligns itself and generates benefits for buyers.

The study also shows that there are criticisms of the blue ocean strategy, since it does not provide a distinction between short and long-term strategic time horizons, therefore the validity of a blue ocean strategy depends on the predictions and beliefs that in occasions are irrelevant.

As final considerations, it is important to emphasize that the three articles selected for the analysis of this document were selected for being the most consistent with the objective and the research question, What is the relationship of implementing the blue ocean strategy and the operation of third party

logistics? Of these three articles, two in case studies specifically focused on China ((C. Kim et al., 2008); (Li & Chen, 2018)), the other article is a literature review study (Alam & Islam, 2017).

It is interesting to see that the case studies are from 2008 and 2018, which could allow us to deduce that companies and analyzes of the blue ocean strategy in outsourced companies have not been given the necessary relevance to go from case studies to full scans. It is also noteworthy that both studies are developed in China. One explanation for this is that said country, has a great need for efficient outsourced companies due to its large number of trade and exports, therefore, it can be said that the greater the number of outsourced companies, the greater the need to study them and specially to apply the blue ocean strategy to them.

The third article is a literature review, and it is from the year 2017, and yet, within the same literature review, they compare organizations that implement the blue ocean strategy with those that do not. Therefore, the theoretical basis of outsourced companies that implement strategies are not developed, so, this study could be considered innovative on this subject.

## 5.6. Conclusions

It was shown that there is a relationship between moving to a blue ocean strategy and improving the efficiency of outsourced logistics organizations. It has also been shown that, when innovative processes are used in a highly competitive market, it is possible to stand out and even expand the horizons of those companies that implement the blue ocean strategy, and do not have to ensure that they are competitive, but rather that they have innovative products.

It is necessary to investigate in depth the impact that the blue ocean strategy has on organizational performance and especially in outsourced companies. The study shows there is very little information that justifies the relationship between outsourced companies and blue ocean strategies. However, in the three selected studies, it is shown that applying the blue ocean strategy does present great benefits for the industry and especially for third party logistics operations companies which face great competition.

It is important to clarify that this study has many limitations, for example, it was shown that there are only three articles that apply the blue ocean strategy to outsourced companies, or outsourced logistics operators, this is of great importance since it has been shown that operations Logistics and supply chains need to have knowledge of the theoretical lens to benefit from these and be more efficient. Therefore, having only three studies that support the theory and objectives of this document is of great limitation because it can be considered an incomplete study and does not allow generalizations of the conclusions obtained.

While it is true, the study has many limitations, it opens many future lines of research and many study possibilities, as it was demonstrated, the blue ocean strategy is very effective for those business environments that are constantly evolving, which agrees with outsourced supply chains.

Hence, a future line of investigation is to study those outsourced supply chains that have implemented the blue ocean strategy, it is also possible to look for the problems of the logistics networks of specific cases and solve them through the blue ocean strategy.

As Samson & Kalchschmidt (2019) mentioned, Operations management needs more and better theories, as well as research methods, giving space to innovate in the type of research papers to present, but also in the way of thinking. Also, the operations function is critical to most organizations and economies, so new perspectives and new research methods must be pursued

that can yield new insights into good practice for both academics and practitioners. This field needs to experiment with new research methodologies to address the new perspectives that challenge researchers as operations specialists. We, researchers, can learn a lot by looking at other fields of study and adapting to our case what has been effective in another, but at the same time we need to encourage the development of new theoretical insights and research methods that are specific to our purposes, ergo the authors are presenting the blue ocean strategy as the driver to improve in supply chain through the third party logistic companies.

Likewise, another future line of research is the application of horizontal collaboration tools such as CPFR (Collaborative Planning Forecasting and Replenishment) from the perspective of a 3PL, as the authors of this work consider in the investigations they are carrying out, still in progress.



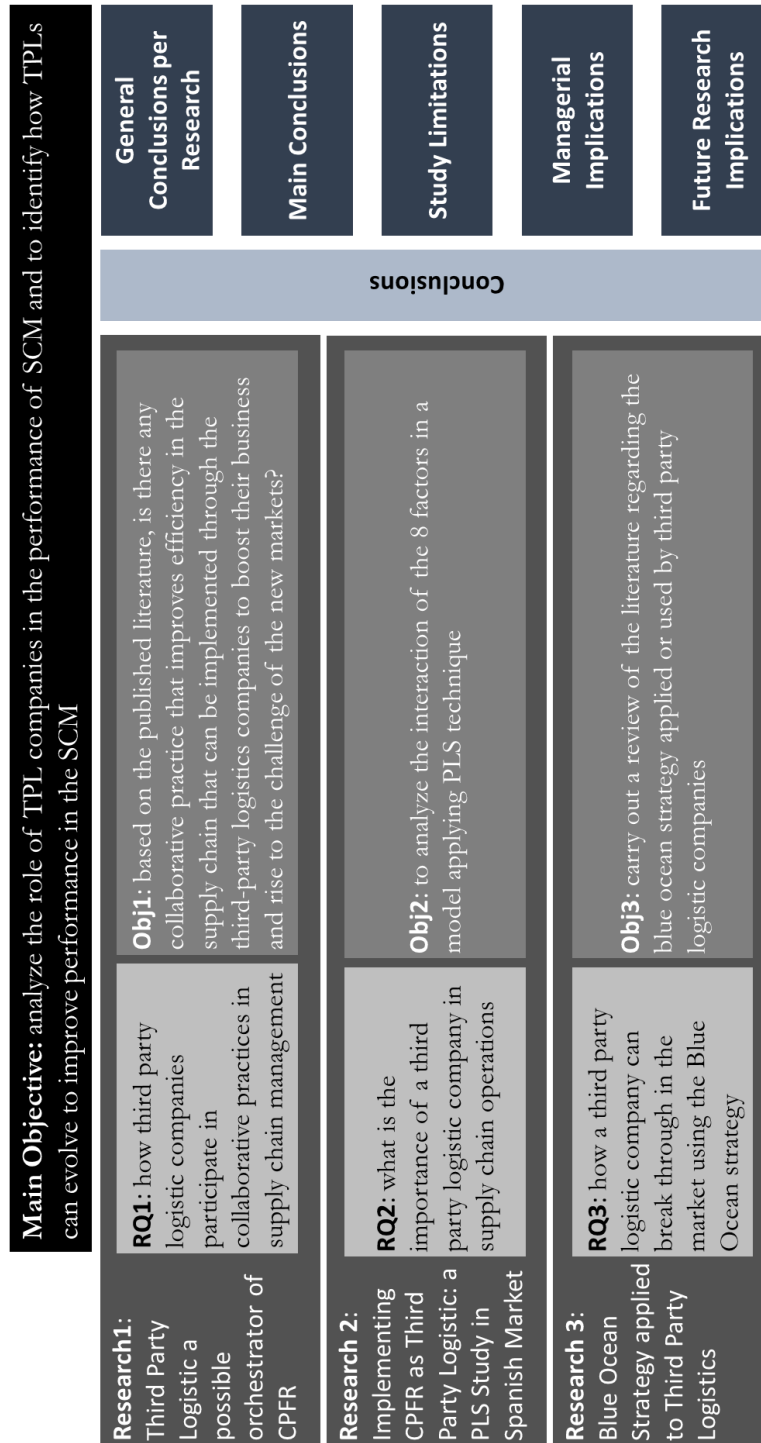
# *CHAPTER VI*





## 6. Conclusions

Figure 6. 1 Tesis Summary Structure



\* Source: own elaboration

Regarding the first research of this thesis, to demonstrate the relationship between collaborative practices, third-party logistics (TPL) companies, and the efficiency of the supply chain, we can explore the published literature and present the main eight topics with detailed concepts. These topics will provide a deep understanding of the evolving steps from basic relationships to more complex concepts:

#### Topic 1: TPL Participation in Logistic Operations

- Exploring the role of TPL companies in managing and executing various logistic operations such as transportation, warehousing, and inventory management.
- Analyzing how TPL participation in logistic operations can enhance efficiency and streamline the supply chain processes.

#### Topic 2: TPL Participation in Supply Chain Optimization

- Investigating how TPL companies contribute to supply chain optimization efforts through their expertise, technology, and resources.
- Examining the benefits of TPL participation in optimizing inventory levels, reducing lead times, and improving overall supply chain performance.

#### Topic 3: TPL Participation with Customers

- Exploring the collaborative relationship between TPL companies and customers in terms of demand forecasting, order fulfillment, and customer service.
- Analyzing how TPL participation with customers can lead to increased efficiency, improved responsiveness, and enhanced customer satisfaction.

#### Topic 4: TPL Participation in Logistic Strategy

- Examining the strategic role of TPL companies in shaping and implementing logistic strategies within the supply chain.
- Evaluating how TPL participation in logistic strategy development can align with business objectives and drive efficiency improvements.

#### Topic 5: TPL Participation with Vendors

- Investigating the collaborative interactions between TPL companies and vendors/suppliers in terms of procurement, inventory management, and quality control.
- Analyzing how TPL participation with vendors can contribute to supply chain efficiency by fostering collaboration, reducing costs, and improving supplier performance.

#### Topic 6: TPL Improves SCM Efficiency

- Assessing the specific ways in which TPL companies can enhance supply chain management (SCM) efficiency, including cost reduction, process optimization, and improved resource utilization.
- Exploring case studies and empirical evidence demonstrating the positive impact of TPL involvement on SCM efficiency.

#### Topic 7: Collaborative Models Improve SCM Efficiency

- Examining different collaborative models and practices such as collaborative planning, forecasting, and replenishment (CPFR), vendor-managed inventory (VMI), and shared distribution networks.
- Analyzing how the implementation of collaborative models can lead to improved SCM efficiency through information sharing, coordination, and joint decision-making.

#### Topic 8: Implementing CPFR from TPL Improves Efficiency in SCM

- Focusing specifically on the implementation of CPFR practices through TPL companies.
- Investigating how the collaborative exchange of information and synchronized planning and forecasting between TPLs and other supply chain partners can lead to enhanced efficiency and performance in SCM.

By delving into these eight topics, we can gain a comprehensive understanding of the relationship between collaborative practices, TPL companies, and supply chain efficiency. This progression from basic relationships to more complex concepts provides insights into how TPL companies can boost their business and rise to the challenges of new markets by actively participating in collaborative practices and implementing CPFR.

The above results are presented as a initial framework based on the first research objective and is further supported and validated through a comprehensive review of the literature.

In the second research delivered, a study is carried out on the 8 factors presented by (Hargous & Guitart Tarrés (2022)), which were jointly analyzed using different models to find the correct relationship between these factors. The Partial Least Squares (PLS) technique was used to test the connection among the different factors and to obtain an exploratory model of the correct association between them.

Once the general model was obtained using the before mentioned technique, the relationship between the different factors was reviewed, on one hand to have been a correct connection, and on the other hand to see the intensity of this relationship, thus achieving a model that presented the best interaction between different factors considering the data gathered during the original surveys of experts in the area.

The objective of analyzing the interaction of the 8 factors in a model applying PLS technique was achieved since according to the authors' knowledge there is no literature taking all this factors in consideration, a survey is developed and conducted. The gathered information forms relationship model presented and developed through PLS. There are 6 hypotheses presented, but only 4 of them accepted. Since it is the first time the 8 factors presented by Hargous & Guitart Tarrés (2022) in their previous work are related together, there might be the possibility to get more data and analyze with other data sets to see if the hypotheses behave in a different manner.

For the third delivery, the objective of carrying out a review of the literature regarding the blue ocean strategy applied or used by third-party logistic companies led to the following results:

After conducting the search and filtering process, a total of 20 possibly eligible articles were identified. These articles were selected based on their relevance to the objective of the review.

The majority of the selected articles, 70% (14 articles), were published from 2017 onwards, indicating a growing interest in the topic in recent years. The year

2021 had the highest number of selected publications, with five articles. In contrast, between 2015 and 2008, only three articles were found. Additionally, between 2007 and 2008, three articles were identified, one of which was selected for representative analysis.

Among the potentially eligible articles, it was found that 50% were case studies or analyses of companies that applied the blue ocean strategy or were outsourced logistics companies. Another 30% (6 articles) consisted of systematic reviews of literature related to supply chain, third-party logistics (3PL), or blue ocean strategies. The remaining 20% were simulation articles that projected companies or situations into the blue ocean strategy or improvement strategies.

While conducting the literature review, opinions and findings from other authors were also considered. One study by Wang et al. (2021) focused on logistics networks and proposed collaboration with logistics transport companies to address problems related to the collection and delivery of packages. Although the study did not specifically mention outsourced companies, the proposed collaboration aligns with the principles of the blue ocean strategy.

Another study by Lohtander et al. (2017) highlighted the need for flexibility and improved production speed in manufacturing environments. The authors emphasized that implementing a blue ocean strategy significantly increases companies' competitiveness in such turbulent environments.

Three articles were selected for detailed analysis. The first article by C. Kim et al. (2008) examined a third-party logistics provider in South Korea that achieved a competitive advantage by adopting advanced communication technologies not utilized by its competitors. The study highlighted the company's success in becoming a leader in logistics information services in South Korea by differentiating itself through the use of radio frequency identification technology.

The second article by Li and Chen (2018) explored the role of supply chain finance in obtaining a competitive advantage for third-party logistics companies in China. The study emphasized the importance of exploring and exploiting market opportunities to diversify and specialize in order to expand participation throughout the supply chain.

The third article by Alam and Islam (2017) was a literature review that examined the impact of the blue ocean strategy on organizational performance. The study revealed that organizations implementing the blue ocean strategy had systematic tools and frameworks to outperform their competition and align value, profits, and people for the organization's benefit.

It is important to note that out of the three selected articles, two were case studies focused on China, indicating a need to study and apply the blue ocean strategy to outsourced companies in that region. The case studies were conducted in 2008 and 2018, suggesting that comprehensive studies on the blue ocean strategy in outsourced companies are still relatively limited.

The third article was a literature review from 2017 that compared organizations implementing the blue ocean strategy with those that did not. The review highlighted a lack of developed theoretical basis for outsourced companies implementing such strategies, making the study innovative in this regard.

Overall, the review demonstrated a growing interest in the application of the blue ocean strategy by third-party logistic companies, particularly in recent years. The selected articles provided valuable insights into the benefits, challenges, and competitive advantages associated with implementing the blue.

## 6.1. General Conclusions per Research

As general conclusions, it can be deduced from the 3 deliveries that:

### *6.1.1. From the first research conclusion:*

1. There is partial evidence from previous researches supporting the concept of a third-party logistics (TPL) company as an enabler to implement evolved collaboration systems like Collaborative Planning, Forecasting, and Replenishment (CPFR) in a supply network, such as presented by Vinay et al. (2009b) when suggested that TPL companies could offer CPFR methodology to many customers based on their capabilities and multi-client processes.
2. Further research is needed to analyze the relationship between TPL companies and their customers and explore the opportunities for evolving into a more collaborative supply network. This was also stated by Attaran & Attaran (2007) concluding that collaborative supply chain management practices, especially CPFR, are firmly establishing themselves as the way forward for successful and sustainable business operations.
3. The research identified eight topics related to TPL participation in logistic operations, supply chain optimization, collaboration with customers and vendors, logistic strategy, and improving supply chain efficiency. Identifying those factors was possible regarding some previous research such as (B.S. Sahay, 2006b), (Bhatnagar et al., 1999b), (Chen, 2011), (Trentin, 2011b), (Zhan-feng & Yong, 2008b), (Bo et al., 2011b) and (Power et al., 2007b).
4. The research provides a starting point for future research on TPL companies as orchestrators to implement CPFR and identifies potential areas for further investigation. This is supported by Hanus (2013b) when explaining that TPL companies have the technical knowledge and capabilities to a system integration with multiple platforms as enablers to implement CPFR. Also, Vivaldini et al. (2008b) mentioned that TPL companies has all the needed know-how to implement such a work system.

### *6.1.2. From the second research conclusion:*

1. The relationship between TPL companies and the implementation of sophisticated collaboration tools or systems like CPFR has not been extensively studied. Hollmann et al. (2015) analyze the CPFR literature showing different types of research, pointing to implementation, or the

different types of models that fit in different cases, but all of them implemented between one or more providers and one or more customers; meaning the implementation is a relationship reinforcement already created between suppliers and customers, none of them presenting an extra player or participant in the relations.

2. The research identifies eight factors related to TPL participation in supply chain management and the implementation of CPFR, and examines their interaction using a Partial Least Squares (PLS) as an exploratory technique (Hargous & Guitart Tarrés, 2022b).
3. The daily participation of TPL companies in the supply chain, relationship with customers and vendors, logistic operations, and supply chain optimization are key factors for successful CPFR implementation, as Panahifar, Byrne, et al. (2015) and Panahifar, Heavey, et al. (2015) suggest in their studies.
4. The study suggests the need for practical implementation and further research to validate the findings and explore the benefits of CPFR implementation with a TPL as an orchestrator. As the authors actual knowledge there are not specific researches pointing to this topic.

### ***6.1.3. From the third research conclusion:***

1. Applying the blue ocean strategy to outsourced logistics organizations can improve their efficiency and help them stand out in a highly competitive market as explained in the literature review conducted by Alam & Islam (2017).
2. There is limited research available on the relationship between outsourced companies and the blue ocean strategy, indicating a need for further investigation as supported by Samson & Kalchschmidt (2019).
3. The study highlights the potential benefits of implementing the blue ocean strategy in outsourced supply chains and suggests future research possibilities.
4. Limitations of the study include the limited number of articles supporting the relationship between the blue ocean strategy and outsourced logistics, making generalizations challenging like Kim et al. (2008) and Li & Chen (2018).
5. Future research could focus on studying outsourced supply chains that have implemented the blue ocean strategy and addressing logistics network problems through the strategy.



In general, both research conclusions emphasize the need for further investigation in their respective areas and identify opportunities for future research to explore the potential benefits of TPL companies as enablers of collaboration systems like CPFR and the application of the blue ocean strategy in outsourced logistics organizations.

## 6.2. Main Conclusions

Based on the analysis of the three research, the following main conclusions can be drawn:

The concept of a third-party logistics (TPL) company as an enabler to implement evolved collaboration systems, such as Collaborative Planning Forecasting and Replenishment (CPFR), into a supply network is supported by partial evidence from previous research. However, further research is needed to fully establish the relationship between TPL companies and their customers and explore the opportunities for evolving into a more collaborative supply network.

The literature review reveals several topics related to TPL participation in logistic operations, supply chain optimization, collaboration with customers and vendors, logistic strategy, and improving supply chain efficiency. These topics provide avenues for future research and highlight the potential for TPL companies to offer new services and act as orchestrators in the supply chain.

The research indicates a gap in the literature regarding the TPL companies' role as enablers of sophisticated collaboration tools like CPFR. The study proposes a relationship model based on the interaction of eight factors, with active TPL participation in the supply chain and logistic operations, supply chain optimization, and customer collaboration being key factors for successful CPFR implementation. Collaborative models and TPL participation in the logistic strategy also contribute positively. However, TPL's impact on improving supply chain efficiency and the application of collaborative models has limited significance in the model.

The findings emphasize the need for further research to validate the proposed model through practical implementation and to explore the impact of the blue ocean strategy on organizational performance in outsourced logistics operations. While the limited number of studies applying the blue ocean strategy to outsourced companies is a limitation, it highlights the potential benefits of implementing this strategy in highly competitive markets and outsourced supply chains.

The research findings present opportunities for future investigations, including analyzing the impact of TPL companies as enablers of CPFR and exploring the implementation of the blue ocean strategy in outsourced supply chains. The limitations of the studies underscore the need for more research in these areas and the importance of theoretical knowledge for enhancing the efficiency of logistics operations and supply chains.

In conclusion, the research suggests that TPL companies have the potential to play a significant role in evolving collaboration systems and improving supply chain efficiency. Further research is needed to validate and expand upon the existing evidence, explore new services and strategies, and investigate the implementation of sophisticated collaboration tools. Additionally, more studies are required to investigate the impact of the blue ocean strategy on outsourced logistics operations and identify practical solutions for optimizing outsourced supply chains.

### 6.3. Study Limitations

The study limitations can include the following:

1. Limited number of studies: The research on the role of third-party logistics (TPL) companies as enablers of collaboration systems and the application of the blue ocean strategy in outsourced logistics operations may be limited. This scarcity of studies restricts the breadth and depth of the evidence available.
2. Lack of practical implementation: While the proposed models and concepts provide theoretical insights, the absence of practical implementation and real-world validation can limit the generalizability of the findings. Practical implementation research is necessary to assess the feasibility and effectiveness of the proposed approaches.
3. Contextual factors: The findings of the studies may be influenced by specific contextual factors, such as industry characteristics, geographic location, organizational size, or cultural considerations. These contextual factors may limit the generalizability of the results to other settings or contexts.
4. Data availability and quality: The limitations in data availability or the quality of data used in the studies can affect the reliability and validity of the findings. Incomplete or inaccurate data may introduce biases or limitations in the analysis and interpretation of the results.
5. Scope and focus: The studies reviewed may have specific scopes and focuses, which could limit the comprehensiveness of the analysis. Different aspects or dimensions related to the role of TPL companies and collaboration systems may not have been fully explored or addressed.

Acknowledging these limitations is essential to provide a balanced assessment of the research findings and to identify areas for further investigation and improvement in future studies.

#### 6.4. Managerial Implications

The research findings have several managerial implications for organizations involved in supply chain management and logistics. These implications include:

1. Importance of TPL companies: The research highlights the potential significance of third-party logistics (TPL) companies as enablers of collaboration systems and supply chain efficiency. Managers should recognize the value of partnering with TPL companies and consider them as strategic allies in enhancing collaboration, optimizing operations, and improving overall supply chain performance.
2. Collaboration with customers: The findings emphasize the importance of collaboration with customers as a key factor for successful implementation of collaboration tools like Collaborative Planning, Forecasting, and Replenishment (CPFR). Managers should actively engage with customers, foster open communication, and establish collaborative relationships to achieve better demand forecasting, inventory management, and overall supply chain coordination.
3. Optimization of supply chain: The research indicates the need for supply chain optimization efforts. Managers should focus on streamlining processes, improving coordination among supply chain partners, and leveraging the expertise of TPL companies to enhance supply chain efficiency. Optimization initiatives can lead to cost savings, reduced lead times, improved customer service, and increased competitiveness.
4. Exploration of new services and strategies: The research suggests that TPL companies have the potential to offer new services and act as orchestrators in the supply chain. Managers should explore innovative services and strategies that TPL companies can provide, such as advanced data analytics, end-to-end visibility, and integrated logistics solutions. These offerings can lead to competitive advantages and improved customer satisfaction.
5. Blue ocean strategy in outsourced logistics: The research highlights the potential benefits of implementing the blue ocean strategy in outsourced logistics operations. Managers should consider the application of the blue ocean strategy to differentiate their offerings, create new market spaces, and overcome competition in highly competitive markets. This strategy can help organizations find untapped opportunities and create value in their outsourced supply chains.

6. Practical implementation and validation: The research findings stress the importance of practical implementation and validation of proposed models and concepts. Managers should actively seek opportunities to implement and test collaboration systems, optimization initiatives, and strategic approaches in real-world supply chain environments. This practical validation will provide insights into the feasibility, effectiveness, and potential challenges of implementing these strategies.
7. Continuous learning and research: The limitations identified in the research call for further investigations and knowledge advancement in the field. Managers should encourage a culture of continuous learning, research, and knowledge exchange within their organizations. Collaboration with academic institutions, industry associations, and research organizations can facilitate access to the latest research findings, best practices, and emerging trends in supply chain management.

By considering these managerial implications, organizations can enhance their supply chain operations, strengthen collaboration with stakeholders, and stay competitive in dynamic and evolving markets.

## 6.5. Future Research Implications

The research findings have important implications for future research in the field of supply chain management and logistics. These implications include:

1. Validation of proposed models: The research suggests the need for further validation of the proposed models and frameworks. Future studies should aim to test and verify the relationship model proposed in the research, which includes factors such as TPL participation, supply chain optimization, customer collaboration, and logistic strategy. By conducting empirical studies and real-world implementations, researchers can strengthen the validity and generalizability of the proposed models.
2. Investigation of TPL impact on collaboration tools: The research indicates a gap in the literature regarding the role of TPL companies as enablers of sophisticated collaboration tools like Collaborative Planning, Forecasting, and Replenishment (CPFR). Future research should focus on exploring the specific mechanisms and strategies through which TPL companies facilitate the implementation and effectiveness of collaboration tools. This could involve analyzing the impact of TPL companies' capabilities, resources, and collaboration practices on the successful adoption and utilization of these tools.
3. Application of the blue ocean strategy: The study highlights the limited number of studies applying the blue ocean strategy to outsourced logistics operations. Researchers can investigate the potential benefits and challenges of implementing the blue ocean strategy in different contexts and industries. This can involve examining how organizations in outsourced supply chains can create uncontested market spaces and differentiate themselves from competitors by offering unique value propositions.
4. Impact of TPL companies on supply chain efficiency: The research suggests limited significance in terms of the impact of TPL companies on improving supply chain efficiency and the application of collaborative models. Future studies can delve deeper into understanding the factors that contribute to supply chain efficiency and the role of TPL companies in driving efficiency improvements. This can involve exploring the operational practices, technology adoption, and process optimization strategies employed by TPL companies to enhance overall supply chain performance.

5. Exploration of new services and strategies: The findings highlight the potential for TPL companies to offer new services and act as orchestrators in the supply chain. Researchers can investigate innovative services and strategies that TPL companies can provide to enhance supply chain operations, customer satisfaction, and competitive advantage. This can involve exploring areas such as advanced analytics, digital technologies, sustainability practices, and value-added services offered by TPL companies.
6. Practical implications and implementation challenges: The research emphasizes the need for practical implementation and the identification of challenges associated with implementing collaboration systems and strategies. Future research can focus on studying the practical implications and implementation barriers that organizations face when working with TPL companies and adopting collaborative approaches. This can provide insights into the real-world complexities, organizational dynamics, and change management issues that need to be addressed for successful implementation.

By addressing these research implications, scholars can advance the understanding of TPL companies' role in collaboration systems, supply chain optimization, and overall supply chain performance. Further research in these areas will contribute to the development of practical frameworks, strategies, and guidelines that can be used by practitioners to enhance their supply chain operations and achieve sustainable competitive advantage.



## *CHAPTER VII*



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# *CHAPTER VIII*



## 8. Appendix

[Company Name]

### **CPFR implementation study through a 3PL company**

The following study is to analyze the eventuality of a CPFR system implementation in a FMCG companies (Fast Moving Consumer Goods) through an external logistic operator.

Company Size (number of employees).

50-100

101-300

301-500

Más de 500

Do you work with a 3PL for your logistic operations?

Yes       No

Seniority Level of the respondent: the first two classifications are expected to not have any subordinates (junior employees). The last three classifications are different management level, from a low level (small area), medium size, and then Manager or area director for SCM or Logistic in a company.

Entry lvl (1-3 years)

Mid lvl (4-5 yeas)

Low Mngt lvl

Mid Mngt lvl

Senior Mngt lvl

### **Section I: 3PL participation in Logistic Operations**

The 3PL is essential to give a Good Customer Service.

1     2     3     4     5

Disagree

Agree

The 3PL support the warehousing processes of the company.

1    2    3    4    5

Disagree                      Agree

The 3PL support the freight processes of the company.

1    2    3    4    5

Disagree                                      Agree

The 3PL support the logistic coordination processes of the company.

1    2    3    4    5

Disagree                                      Agree

The 3PL support the inventory management processes of the company.

1    2    3    4    5

Disagree                                      Agree

## **Section II: 3PL participation in the supply chain optimization**

The 3PL has total system integration with the company ERP.

1    2    3    4    5

Disagree                                      Agree

The 3PL has knowledge of the company inside operations.

1    2    3    4    5

Disagree                      Agree

The 3PL contribute with ideas and solutions for the business processes optimization.

1    2    3    4    5

Disagree                                      Agree

The 3PL participates in the demand planning forecast of the company.

1    2    3    4    5

Disagree

Agree

### **Section III: 3PL participation with customers**

The 3PL participates in the joint demand forecasting with the Customer.

1    2    3    4    5

Disagree

Agree

The 3PL generates purchase orders for the customer replenishment process.

1    2    3    4    5

Disagree

Agree

The 3PL coordinates follow up meetings and activities within customer, the company and the Warehouse.

1    2    3    4    5

Disagree

Agree

The 3PL has system integration with customers.

1    2    3    4    5

Disagree

Agree

The 3PL has total visibility of inventory levels, demand forecast and goods movements in the whole chain.

1    2    3    4    5

Disagree

Agree

### **Section IV: 3PL participation in logistic strategy**

The 3PL participates and contribute in the company logistic strategy.

1    2    3    4    5

Disagree

Agree

The 3PL participates in the logistic relationship and logistic strategy with customers.

1    2    3    4    5

Disagree

Agree

The 3PL participates in the logistic strategy implementation.

1    2    3    4    5

Disagree

Agree

The 3PL measures and generates periodic reporting for the logistic operations.

1    2    3    4    5

Disagree

Agree

### **Section V: 3PL participation with vendors**

The 3PL participates in the negotiation with vendors.

1    2    3    4    5

Disagree

Agree

The 3PL administrates the vendor management.

1    2    3    4    5

Disagree

Agree

### **Section VI: 3PL improves SC efficiency**

Using a 3PL benefits the supply chain management of the company.

1    2    3    4    5

Disagree

Agree

The 3PL delivers value to SCM processes.

1    2    3    4    5

Disagree                      Agree

**Section VII: Collaborative models improve SCM efficiency**

VMI improves the delivery and inventory level efficiency in the supply chain.

1    2    3    4    5

Disagree    Agree

CPFR improves inventory levels, replenishment lead-time and planning.

1    2    3    4    5

Disagree                      Agree

**Section VIII: 3PL participation with vendors**

TPL has the know-how to implement CPFR.

1    2    3    4    5

Disagree    Agree

TPL has the resources to implement CPFR.

1    2    3    4    5

Disagree                      Agree

TPL can offer CPFR methodology to many customers.

1    2    3    4    5

Disagree                      Agree

TPL has staff training capacity for CPFR implementation.

1    2    3    4    5

Disagree                      Agree

TPL has the technical knowledge and capabilities to a system integration with multiple platforms.

1    2    3    4    5

Disagree

Agree