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CPFR Model introduction for third party logistic companies to improve SCM efficiency

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RESUMEN

La presente investigación muestra el desarrollo y aplicación del modelo colaborativo de planificación pronóstico y reposición (CPFR) implementado den diferentes industrias, utilizado para la mejora de la administración de la cadena de suministro (SCM). Los principales resultados de esta implementación son la reducción de inventarios, la mejora en el servicio a clientes y la mejora en los niveles de pronóstico; sin embargo, el costo de implementación es alto debido a la necesidad de integración de sistemas, contratación de personal y entrenamiento, además de una larga curva de aprendizaje.

Por otro lado, se presentan los principales avances en conceptos de colaboración y desarrollo de la industria de operadores logísticos tercerizados (TPL), así como las capacidades y oportunidades de mejora que puede aportar esta industria a sus clientes.

Finalmente, planteo un modelo de aplicación de CPFR por parte de las empresas TPL hacia sus clientes, ofreciendo mejoras operativas y eficiencias en implementación y recursos operativos, validado por un experto en el área de SCM con experiencia práctica en los diferentes conceptos presentados durante el trabajo.

ABSTRACT

The present research shows the development and application of the collaborative forecasting planning and replenishment (CPFR) model implemented in different industries, used for the improvement in the supply chain management (SCM). The main results of this implementation are the reduction of inventories, the improvement in customer service and the improvement in forecast levels; however, the implementation cost is high due to the need for systems integration, personnel hiring and training, in addition to a long learning curve.

On the other hand, the most advanced concepts of collaboration and development of third party logistics (TPL) industry are presented, as well as the capabilities and opportunities for improvement that this industry can bring to its customers.

Finally, I propose an application model of CPFR by TPL companies to their customers, offering operational improvements and efficiencies in implementation and operational resources, validated by an expert in the SCM area with practical experience in the different concepts presented during this work .

KEY WORDS:

Collaborative Planning Forecast and Replenishment (CPFR), Third Party Logistic (TPL), implementation

INTRODUCTION

Supply Chain Management (SCM) has increased its preponderance and relevance in most companies, with a specific orientation towards improvement and perfecting customer relations while reducing or maintaining operational and inventory costs. Moreover, the collaborative work with third party logistics has grown in the last decades (Hertz & Alfredsson, 2003).

It has to be consider that the field of Supply Chain Management (SCM) has evolved in a dramatic way since the globalization era, thus the factor of innovation, sustainability, and technology are an important 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 changes in society are doing in the SCM field. To be able to meet the upcoming challenges, the SCM industry had to face the challenges through using strategies as Collaboration practices. The Collaboration in supply chain is understood as the two or more independent companies work 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).

During this and the following section of this paper there are going to be 2 different lines of research, the first one is going to be the horizontal collaboration in SCM and on the second one is going to be a third party logistic provider research in terms of innovations and collaboration practices given to their customers.

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". 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). 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).

On the other hand, Hvolby and Trienekens (2010) declare that 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. 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 extend based on human interaction.

Third Party Logistic

At the beginning of the 2000's decade the research and publications in third party logistics (TPL) has been 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 large companies' emergence 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 look for different business opportunities to offer their customers better and more complete services (Selviaridis and Spring 2007).

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.

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 premise, I propose the following question: is there any collaborative practice that improves efficiency in the supply chain and can be implemented through the third party logistic companies to impulse their business and achieve the new economies challenges?

Thus, the objective of this work is present validate a theoretical model that imply a collaborative solution to improve the efficiency in the supply chains with the participation of third party logistic companies as main player, validating the model through a profound interview with an experienced and expert professional in the SCM area knowledgeable in TLP management and also SCPF implementation as provider or customer.

LITERATURE REVIEW

Given the collaborative practices, the current 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 and Zhang 2013). Following this principle, we observe several arguments that imply the usage of said practices.

Horizontal Collaborative Practice

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

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) that involves 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, and all of them 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 reinforcement of a relationship 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 ir empirical evidence provided by Hill et al (2018) of how CPFR implementation contributes to the supply chain coordination and improvement 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 firms who have not indicated that they were implementing CPFR, specifically with the reduction in the overall inventories, and the increase gross sales of the firms adopting this practice.

On the other hand, specifically in the retailer sector environment, Büyüközkan & Vardaloğlu (2012) declared that that this sector is characterized by intense pressure of competition, ever-changing portfolio of products, hundreds of different products, ever-changing customer requirements and be able to stand in a mass market. When considering that the giant retailers work together with their suppliers, each independent operation is seen as a comprehensive structure, consisting of thousands of sub-processes. In short, the retail industry dynamism and work in cooperation with the competitiveness of the sector is one of a rare combination, in which a CPFR model is a hopefully expected scheme, integrating trading partners' internal and external information systems to proposed to assist establishing 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 support as a prediction tool (Kosko 1986). The authors proposed a CPFR model made up of three sub-systems, (1) namely information sharing 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.

Third Party Logistic

The 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 and 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 and 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 support the idea of value co-creation strategy. The authors proved that there are positive relationships between TPLs resource commitment and manufacturer performance, and also 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 of technology new 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 TLPs companies 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 TLP market and customers.

After my research, it is of my best knowledge, there is not paper about implementation of CPFR practices through a TLP company. Therefore, my proposal is a theoretical model that can be implemented in a TLP company so they can offer to their customers (manufacturers, distributors or retailers) the implementation of CPFR practice, taking advantage of the own TLP resources and capabilities.

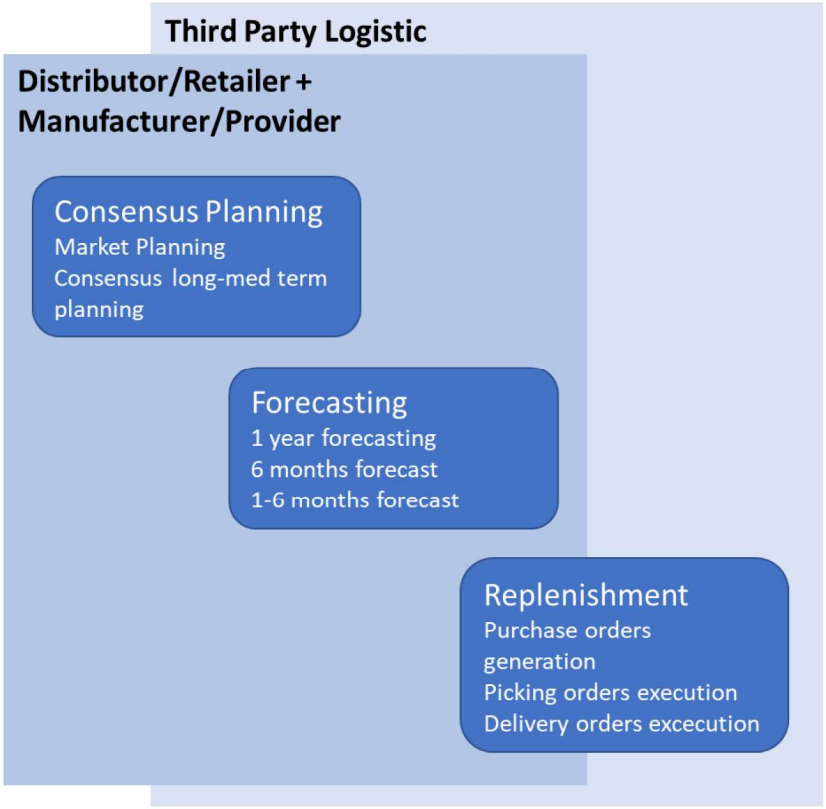
METHODOLOGY

Based in the methodology presented by Díaz-Madronero & Poler (2017) I will present a theoretical model to implement CPFR practices leaded by a TPL, considering the different activities, the requirements, systems communications, position in the supply chain, actors, etc.

The operational model is presented in Figure 1, Proposed TPL Operational Model for CPFR practice. There are presented the 3 basic aspects of planning, forecasting and replenishment under a collaboration structure. This collaboration structure is embracing the usual 2 players of a CPFR practice as in one side the retail or distributor, and on the other side the manufacturer or provider, and both under the umbrella of the third party logistic company who is the enabler of this collaboration three-party system. The process model presented is based in them CPFR model from VICS (1998) and VICS (2004).

As is shown in Figure 1 there are 3 main activities presented, each one of them divided in minor activities/concepts in which the three participant has a different roll.

Figure 1: Proposed TPL Operational Model for CPFR practice



*Source: self-previous research

As is shown in Table 1, Proposed TPL-CPFR Relationships. The participation of each actor in all the activities have to be in collaboration with the others. The intensity of the participation in each process is identified as strong (++) or weak (+), using the same logic as presented by MacCarthy et al (2003).

Table 1: Proposed TPL-CPFR Relationships

	Consensus Planning		Forecasting			Replenishment		
Relationships	**Market Planning**	**Consensus long-med term planning**	**1+ Year Forecasting**	**6-12 Months Forecasting**	**1-6 Months forecasting**	**Purchase Orders Generation**	**Picking Orders Execution**	**Delivery Orders Execution**
Distributor/ Retailer	++	++	++	++	++	+		+
Manufacturer/ Provider	++	++	++	++	++	+		+
Third Party Logistic		+	+	++	++	++	++	++

*Source: Previous self-research

The description of each of the process and sub-process are defined below:

The Consensus Planning is the initial part of the collaboration between a distributor/retailer (Customer) and a manufacturer/provider (Vendor), where both of them coordinate the planification for a certain future about the selling, distribution and basics agreements of a commercial relationship. The first step is to define a market planning with a collaborative team from customers and vendors as defined by Hao et al (2011), agreeing the portion of the market they want to get together and the actions framework they should define to achieve that target. In a second step is the consensus long-med term planning, where the collaborative team define times and product categories/lines to achieve the agreement from previous step. They have to determine the main products by category to be sold in a 1 to 3 years period ahead so they can plan actions and commercial strategies. This information has to be shared with the TLP so they can plan the space, traffic, transport, headcount and hardware/equipment needed in a 1 to 3 years horizon and be prepared to do any investment required to absorb the future operation. Regarding the mid-term planning, the collaborative team have to develop a detailed sales plan with category products by month for the upcoming year, in order to develop budgets for commercial actions, but also so the TLP can structure in more detail that planning for the upcoming period and stand to the next process, the forecasting.

The collaborative Forecasting process is one of the most important parts of any CPFR implementation and success regarding the detailed and large amount of data that must be processed, review and agree between the collaborative parts to run the operations. Following the Hao et al (2011) ideal forecasting activities, I propose a collaborative process divided in three steps regarding the timing and periods. In the case of the forecast for more than 1 year, there has to be an estimated by product quarterly or by semester, just to have an idea of the volumes that are going to be produced or bought by the vendor and admitted, storage and distributed by the TLP. For the 6 to 12 months forecast the TLP has to lead this process and coordinate the customer and vendor and have a detailed monthly based forecast by product. For the last stage, the forecast need to be done by week, by stock-keeping unit (SKU), with all the information form promotions, commercial actions and everything that could affect the forecast at the same level. This last stage from the forecast process is the most critical one for all the actors, and is should be revised with a weekly basis in the sales and operations planning (S&OP) meeting leaded by the TLP staff (Ambrose 2015).

The last process is mainly driven by the TLP, since the Replenishment is the execution of the forecasting according to the planning. There must be certain rules and triggers to generate a purchase order (PO) from the customer side but executed by the TLP. Also, the picking order to fulfill the PO launched in the previous stage, done by the TLP. Finally, the delivery order (truck loading and distribution to one or more location) have to be managed by the TLP operator.

Regarding the participants of each one of the processes, there are shown in Table 2, Proposed TPL-CPFR Participants, for each stage and company involved.

Table 2: Proposed TPL-CPFR Participants

	Consensus Planning		Forecasting			Replenishment		
Participants	**Market Planning**	**Consensus long-med term planning**	**1+ Year Forecasting**	**6 Months Forecasting**	**1-6 months forecasting**	**Purchase Orders Generation**	**Picking Orders Excecution**	**Delivery Orders Excecution**
Distributor/ Retailer	Sales/ Marketing	Sales/Marketing & Procurement	Sales/ Marketing	Sales/ Marketing & Procurement	Sales/ Marketing & Procurement	Sales & Procurement		Sales & Logistics
Manufacturer/ Provider	Sales/ Marketing	Sales/Marketing & Procurement/ Production	Sales/ Marketing	Sales/ Marketing & Procurement/ Production	Sales/ Marketing & Procurement/ Production	Sales & Procurement		Sales & Logistics
Third Party Logistic		CPFR	CPFR	CPFR/ Operations	CPFR/ Operations	CPFR/ Operations	CPFR/ Operations	CPFR/ Operations

*Source: Previous self-research

The areas involved are Sales/Marketing, in charge of defining the go to market strategy for long, medium and short term, and also to set the roadmap to achieve the company's mission. The collaboration between these areas from Customer and Vendor need have the purpose of effort merging and points of view and then trace the plan to growth and penetrate the target map together (Götz et al 2009). Beside the planning process, these commercial areas have to be involved in the forecasting process, because they have the knowledge about the behavior of the different products in the market, and also are the responsible for the commercial actions that are going to take place in market to achieve the sales and market share targets. Finally, in the replenishment process, sales areas have to be aware and informed about the on-going POs and the delivery dates and quantities for follow up purposes.

Then the Procurement and Production areas oversee the activities that enable the availability of products, so the companies can sale. In the case of customers, procurement oversees buying products to the vendors; in the case of vendors procurement or production oversee buying to the factories or produce (manufacture or assemble) finished goods, in case of distributors or manufacturers, respectively. In the case of planning process, they must be aware of any decision to secure the product availability for the period under scope, securing the operations to do so. In the forecasting processes is a similar role, they need to know the upcoming plans, so they

can assure the product supply to reach the targets. In case of logistics, they are responsible for the order management process and execution.

Finally, the CPFR actor is the enabler to all the collaboration and synchronization between two companies and the different areas. To analyze better the TLP-CPFR role is needed the understanding of how the TLP companies are improving their information technology (IT) capabilities, ergo, their capacity to communicate and interface their systems with their customers (their customers can be manufacturers, distributors, retailers, etc.). Gong et al (2018) study how the type of contract that the TLP get with their customer motivate them to enhance and invest in IT so they can give a better support and service.

Finally, to understand the parallel between a regular Sales-Purchasing model, a classic CPFR practice implementation, and the TLP-CPFR model presented there are the mayor differences presented in Table 3, parallel in operational models.

Table 3: Parallel in Operational Models

		Regular Sales-Purchase Model	Classic CPFR Model	TPL-CPFR Model
Commercial Relations	**Customer**	Customer place PO for products Self Planning and Forecast	Vendor CPFR team: prepare Replenishment Order (RO) Joint action: Planning and Forecasting Joint action: Commertial Actions	TLP-CPFR team: prepare Replenishment Order (RO) Joint action: Planning and Forecasting Joint action: Commertial Actions TLP-CPFR team: total visibility of the full operation and commercial actions; coordinate and prioritize activities with WH
	Vendor	Vendor serve the PO from customer Self Planning and Forecast		
	Joint Action	Commercial actions/promotions		
	TLP	-	-	
Systems/ERP (IT)	**Customer**	Input PO in system, send PO to customer by email or other way	Electronic data Interchange (EDI) to transfer information between systems Vendor CPFR team: Input PO in System	Total system integration through TLP systems TLP-CPFR team: full visibility from stock level and deliveries
	Vendor	Recive PO, input PO in System		
	Joint Action	-		
	TLP	Receive PO, generate picking order	Receive PO, generate picking order	
Operational Relations	**Customer**	Keep high inventory to sell	Vendor CPFR team: check inventory levels in customer locations and vendor Warehouse (WH) Reduce inventory level in customer and vendor Improve service level Administrate vendor inventory, process their customers PO's, coordinate with Vendor CPFR team to coordinate delivery	TLP-CPFR team: visibility of the whole supply chain, allocate inventory according to needs and forecasting, coordinate deliveries, maximize assets and services
	Vendor	Keep high inventory to serve customers		
	Joint Action	-		
	TLP	Administrate vendor inventory, process their customers PO's, coordinate and deliver to customer		
Training and Hiring	**Customer**	-	-	-
	Vendor	-	Hire CPFR team (depends on number of SKUs and customer locations Train new team	-
	Joint Action	-	-	-
	TLP	-	-	Hire CPFR team (depends on number of SKUs and customer locations Train new team (only for the first service offered) Incremental growth of the CPFR team

*Source: Previous self-research

The Table 3 is proposed as an example of how a simple application of the TLP-CPFR model with a distributor or manufacturer would be working with a TLP to operate their logistics (warehousing and distribution) and a customer with their own WH.

After the design of the proposed model I presented it and discussed with an expert in the field with more than 25 years of managerial experience in the field. The expert worked in Procter & Gamble (P&G) from the beginning of his career for more than 15 years in SCM, leaving the company as Supply Chain Manager for P&G Latin America, assuming in LG Electronics Chile as SCM Director for Chile, Peru, Bolivia and Paraguay. In both companies he implemented collaborative practices (VMI, CPFR, Green Sales, and others). After 5 years in LG Electronics he moved to DHL (one of the largest third party logistics companies in the world) to assume the Latin America Operations, with more than 500 customers. According to Bogner et al (2009) the experts have special knowledge which is related to their professions, and one of the ways that a researcher can get quality information is from theory generating expert interviews, targeted not only at the expert's explicit specialist knowledge, but also at their tacit specific interpretive knowledge (know-why) and procedural knowledge (know-how) obtained through (professional) practice. The authors also present that an expert is relevant if the research interests focus on the analysis of a specific configuration of knowledge experts are interesting because of the practical consequences of their expert knowledge for others. Experts are in this sense responsible for the planning, implementation or controlling of a solution (to a problem). They have privileged access to decision-making processes and people.

Therefore I prepared an interview based on Jacob & Furgerson (2012), so the interview was separated by stages. (1) Basics, there was a presentation of my situation as researcher and also, I asked him to present himself and his background (described in the previous paragraph. (2) General context, the main idea of the research was explained to the expert; in this case was explained that the focus was in the implementation of collaborative practices on one side, and in the third party logistic company's evolution on the other, giving the interviewee the main ideas of the literature review to contextualize. (3) First questions about the topic, I presented several "tell me about…" questions so the interviewee feels comfortable and give me an idea of his specific knowledge about the discussed topic. In this part he spoke about the problems to implement CPFR practices, but also the benefits for the companies, about the difficulties to work in horizontal collaboration with customers SCM areas, etc. He also explained the position where the TLP industry is nowadays emphasizing the need to innovate and develop IT solutions to offer new services and products to actual and future customers. (4) Main discussion, after I understood the interviewee knowledge about the research

topic clearly, I went through the main objective of the interview, presenting and discussing my proposed model. First, I asked him if he has acknowledged about a CPFR practice applied from a TPL company, or at least with the TPL personnel involved in the CPFR main activities and aligned with the literature review he denied knowing something like that. Then, I presented my model in detail, as it is exposed in the present document, and ask him for his opinion; he agreed that something like that could be very useful, specially for the TLP companies point of view. He also highlighted the main problem that the TPL companies have with their customers, the lack of trust. According to his experience there is a gap between the interest from the companies to reduce cost and hire a TPL firm and to put them as a partner in their business and delegate important, critical and sensitive activities, as the one presented in a CPFR practice, even though they might have enough experience and knowledge in the area. According to him, this is one of the hardest milestones to deal with in order to get to a future next step as the one I proposed with my TLP-CPFR model.

RESULTS

To highlight the mayor differences in the theoretical model presented with the classic CPFR model are the responsibility to do the IT integration between customer and vendors, in the proposed model the owner is the TLP, regarding the systems capabilities they present in order to operate with multiple customers at the same time as presented by Gong et al (2018).

On the other hand, they have the know-how and knowledge in implementing different operational models to support their customers. This specific characteristic gives the TLP company an improvement in the learning curves in order to understand and adopt a CPFR practice as Yao et al (2013) expose. But this process is needed only in the implementation of the first TLP-CPFR practice, ergo, for future customers they only need to train an incremental head count and not a whole team. Regarding this point, the first implementation should be similar to the classic CPFR model, but the second and upcoming should be faster and easier.

As a holistic solution we can observe similar processes in the supply chain, but the main characteristic shown in this model is the ability to coordinate the whole chain with visibility in every sales point (customer locations), the main customer WH, the different vendor distribution centers and the main vendor warehouse, plus the forecast and the incoming products (in case of vendor as distributor) or the manufacturer planification (in case of vendor as manufacturer).

CONCLUSIONS

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, three aspects that are present in the TLP-CPFR model proposed. The TLP 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, as the model presented. Finally, the collaboration is the essential part of the TLP-CPFR practice, being part of the customers and vendors operations to offer them a better solution for the whole chain, being able to manage all the echelons from the chain.

Regarding the research question about if there is any collaborative practice that improves efficiency in the supply chain and can be implemented through the third party logistic companies to impulse their business and achieve the new economies challenges, the answer is not as simple as "yes" or "no". Currently, according to my knowledge, there is no implemented collaborative practice by a TLP that improves efficiency in the supply chain, so I proposed a modification of the "classic" CPFR model to include the TLP company as the main player in benefit to all the parts.

LIMITATIONS

This proposed model has been validated only through one deep interview to an experienced SCM manager with knowledge in retail, manufacturer, distributor and third party logistic, and also implementing CPFR practice as vendor and customer.

Therefore, it should be an opportunity to validate this model through simulation tools, or another theoretical method.

Until we could find a real CPFR model implemented from a TLP or at least with them included in the main activities as a partner, is going to be difficult to prove these benefits with empirical data.

MANAGERIAL AND ACADEMIC IMPLICATIONS

Managerial

In this CPFR scenario the TLP company can be beneficiated from different factors; (1) opportunity to get new customers interested in a CPFR practice offered from the TLP, (2) reduce inventories for both parts in the supply chain meaning more space for warehousing, (3) offering a high value service with no incremental investment in hardware, no extra space needed for the specific service, no incremental IT development, etc.

According to the expert interviewed there is another gap to surpass before a model like the proposed one could take place, the problem with the trust in the TLP companies from their own customers.

Academic

The first step should be validate the proposed model with more experts and support that with surveys from manufacturers who work with TLP companies, retailers or distributors, and also TLP companies personnel, to have all the point of views in perspective and improve the model.

Also, there is a research opportunity to validate the presented model with simulations and surveys to TLP company's workers, and also measure the acceptance from customers (companies that actually work with TLPs) to adopt a CPFR practice managed from a TLP.

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