# Increasing competitiveness through a logistics and transportation cluster: A Literature Review

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## Abstract

A logistics cluster is a concentration of enterprises which their core activities are logistics and related services, in a dense and specific geographical area, pursuing to improve competitiveness in operations and services offered by the logistics chains competing as a region.

This paper presents a theoretical approach related to the logistics and transportation clusters, the main factors to remain in a successful operation and how to compete as a group to increase regional competitiveness.

Based on different research frameworks in a wide spectrum of countries about clusters for competitiveness and specifically logistics clusters development, a literature review is presented in this exploratory study, mainly used to begin the construction of a Logistics Cluster in a particular region in Latin America. This logistics cluster is the 11th cluster in the region and the first one based on logistics and transportation operations. In brief, the horizontal integration, synergy between members, diversification and the geographical logistics intensive agglomeration becomes the main topics of interest of this paper, looking forward to build competitiveness through a logistics cluster, and gain attractiveness for the region.

**Keywords**
Logistics cluster, transportation, competitiveness, transportation diversification, geographical agglomeration location.

## 1. Introduction

Through the supply chain, goods transportation has represented an important link in order to increase competitiveness for organizations, both manufacturing and services. In fact, is mainly important to develop strategies to intensify the service level for being competitive in a specific location. Nowadays the aggressive competitors are getting together creating alliances for a common front not competing as an enterprise by itself, so together they participate as a region against other specific regions to become more attractive and sophisticate to their customers. Logistics is not an exception.

In order to participate in high-end markets, logistics enterprises in Mexico are forming strategic associations supported by the government and by academic institutions.

A cluster initiative is a type of strategic approach based in to develop strategic industrial sectors and emerging sectors in a particular region, involving the private initiative, the government and the universities working together to mature processes and synergies in specific activity sector to increase competitiveness.

In Mexico, based on Marshall's agglomeration studies (1890) and Porter's (1998) clusters' literature, the initiative for a collaboration as a cluster is centered on a Triple Helix model (Etzkowitz & Leydesdorff, 2000) integrating academics, government and industries, also established with a logistics and transportation orientation, looking forward to increase competitiveness in this activity sector, and make the transformation from an industrial district to a real cluster (Lazzeretti, 2006) based on logistic intensive operations as the central axis (Celis, Martinez, & Felix, 2012). The attractor enterprises and the sophisticated suppliers' complimentary services are some of the different activities that should be involved for a logistics cluster development. Nowadays, the small and middle size road truck carriers are the most of the companies involved by now. According to Ketels, Lindqvist & Sölvel (2006), clusters evoke the companies to operate more efficiently and with better response to markets. Also, the innovation development is faster, as well as the new business associations between suppliers and cluster' participants.

The present document will present primary a literature review about clusters, emphasizing on logistics cluster. Continue with a theoretical framework of the important factors to increase competitiveness through a logistics cluster and the research authors' proposals to measure some of the aspects in order to set an approach to a competitiveness increase.

## 2. Methodology

The present section contains a description of the research process used in this work and how the data was gathered to identify papers relevant for this study.

As a first step the research question was defined as: Which are the relevant factors to develop a logistics cluster in the literature?

The followed step was to define the inclusion/exclusion criteria: (1) Search limitations to papers, (2) considering only papers written in Spanish and English language, and (3) exclusion of papers not accessible as full-text.

For the next step, data collection, the keywords used were defined as: logistics clusters, logistics alliances, collaboration, clusters, competitiveness, and supply chains alliances. Then used to search them in online journals databases and scholarly databases (EBSCO, Emerald insights, Wiley, Scopus, Taylor & Francis Group, Web of Science, Springer) and also Google Scholar.

The keywords should be found in the paper title, paper keywords and/or paper abstracts.

Then the papers were read to assess their relevance and contribution to the present study, and as a final step the discussion of the findings for the future work.

## 3. Literature review

To develop a successful firms' integration as a cluster in Mexico using the Etzkowitz & Leydesdorff model approach (2000), the interconnected companies of the specific sector should be stablished in a specific geographical location, and together develop a governance policy model and organizational structure to perform their value added activities. In fact, the government strategic plan should first of all designate the strategical activity sectors to designate a cluster initiative that later will perform as a cluster for competitiveness. To define *cluster* there are contributions by different authors exposing their main characteristics and attributes that will be discussed further in this document. Additionally, the *logistics cluster* characteristics will be well defined, so the main factors to develop and grow a successful one too according to the authors.

### 3.1 Clusters

The first concentrations that later will be known as *clusters*, through the history had received very different names, nevertheless at this time, their development is a very important study area for business and economics sciences, because of their impact in competitiveness.

On the beginning of the twentieth century, Marshall (1919) identifies clusters under the name of *geographical agglomerations* or *industrial districts*, when certain geographic areas were presenting superior regional economic development than other activity sectors, and became characterized or identified for their particular, both product and service differentiation, also giving outstanding valuable attributes to their consumers, condensed on that specific geographical area.

According to Marshall (op. cit.) an Industrial District refers to a group of specialized specific sectors, located in a

geographical defined area, gaining benefits themselves through the advantages provided by greater attractor enterprises, generating innovation, skilled and specialized labor, and trust between the enterprises owners (Marshall, 1919).

Since the beginning of international trade-off, certain regions were recognized for their strong products, like the wine producers, and those concentration areas were renowned on that specific product or service. Other important products from the early trade like papyrus, silk, wheat, to mention some, were important between East and West (Asia, Africa and Europe) since the third century (Pirenne, 1972).

Later in the fourth century, cities like Syria and Minor Asia in the East, concentrated great textile export centers focused in transport their goods in Syrian ships across the Mediterranean Sea. In the ninth century, Norwegians and Danish convered the rivers in navigable, initially to defend their empire but later to facilitate the trade becoming a very intensive maritime exchange operations centers were settlements and agglomerations formed quickly and accelerated local development.

Through the same time also, some economic unions called *guilds* were raised, creating geographical settlements of individuals with the same profession called artisans who work on specialized workshops with the aim of supplying works to the market, protecting the work of the guild members, rising the specialization in the region, generating (1) economic wealth (2) well-regulated skills, (3) systems knowledge sharing and (4) collective learning. The same workshop was responsible for supplying the materials and supervising the production.

Similar to clusters, the guilds characterized for having a local scope, regulations and governance. The knowledge exchange and innovation development (e.g. masterpieces) allowed guilds positioning in the cities with high commercial importance, connecting different complimentary functions and integrating chains vertically in the regions, in fact, could be different professions not exactly the same industry but with integrated progress (Becattini, 2004), creating the industrial districts.

In the other hand, for Lazzaretti (2006) an industrial district differs from a cluster on the development scope, for the first one the focus is in meso economy local oriented to productivity and the wellness for the regional actors and the enterprises located in the same geographic region, and for the second the scope is on a micro economy orientation centered in developing a global competitiveness scheme in order to generate competitive advantages through the production chains to serve bigger markets.

Authors like Martin and Sunley (2001) consider the cluster concept as generic and vague, as an idea for a national economy to provoke innovation and competitiveness but without delimitating a competing strategy in international markets and without an association that influence directly on competitiveness.

For Porter, a cluster is represented by interconnected companies with a geographical concentration and density including institutions such as universities, commercial associations, and government entities. (Porter M. E., On Competition, 1998).

Authors like Schiele (2008) states that the companies integrated in a cluster, should be from an specific industrial sector, like aerospace, automotive, bio technology, to mention some, in order to stablish a link and a common objective of joint development, and to help each other's to participate in bigger or sophisticated markets.

The enterprises reunited in a cluster, create alliances and share theirs strengthens to attend opportunities and higher value markets, complementing each other's with their common features (McCormick, 2005), and create integrated fronts to serve more broadly. If there's a need for investment, the economic resources are brought together so that all members receive some benefit from the investment, which individually would be much more difficult to access.

For Scheel and Parada (2008), first must be the environment and conditions to develop a cluster, which must deliver Economic Value Added (EVA) through the connectivity between the capabilities to innovate, technology development and the construction of a system, that all together generate capital competitiveness.

In addition, clusters are stimulating development and the economic growth of the geographical area and its competitiveness (Nallari & Griffith, 2013) and benefiting themselves from the collective learning and knowledge sharing (Rivera, Sheffi, & Welsch, Logistics agglomeration in the US, 2014), including the exchange of best practices, strategies and innovation, that elevate the level of the participants in the cluster, creating learning communities with shared visions for achieving regional goals.

By now, clusters are considerate important for the countries' economy, due to their agglomeration generate tangible economic benefits in three dimensions (Ketels, Lindqvist, & Sölvell, 2006):

(1) The member companies operate more efficiently, as well as its high specialization they can react more quickly to meet their market's needs.

(2) Participants acquire higher levels of innovation, due to the knowledge spill generated from the interaction of companies and research institutions, as well as the strong pressure to create new contributions among the cluster' members.

(3) The level of new business formation tends to increase in the clusters, as both suppliers and cluster' members receive the benefit of economies of scale and reduce the costs of failure, while increase the opportunities to use the services of the entrepreneur enterprises in many companies in the same industry.

As mentioned, clusters in developed countries tend to be larger in the number of integrated companies, are more reliable, share more knowledge, have greater competitiveness collaboration and generates more innovation than the clusters in developing countries (Ketels, Lindqvist, & Sölvell, 2006).

### 3.2 Logistics Clusters

Some authors have written about logistics clusters, but particular international competitiveness institutes (TCI, 2014) and the World Bank are doing interesting work on it, such as the *Logistic Performance Index* LPI, (World Bank, 2014) or research in specific hubs such as German and Danish sea ports , fluvial operations through U.S.A, PLAZA in Spain, Panama Ports, Asian ports, to mention some.

According to Sheffi (2012), Logistics clusters can be described as nodes on the intricate web of international trade routes and supply chain networks including companies which offer logistics services, the logistics division of industrial retail firms and also the enterprises for whom logistics services represents an important part of the product or service cost (Rivera, Gligor, & Sheffi, 2016). These logistics clusters are instituted to put together logistics capabilities in order to have positive impact in diverse stakeholders. (Klink & De Langen, 2001), (De Langen, 2002).

Additionally, logistics clusters can be developed depending on the transportation mode, function or application, in the first case, by ground transportation, air transportation or sea transportation, in the second one special services, import or export, and in the third case as international, regional or urban sector.

A logistics cluster grows through a positive feedback or mutual reinforcement, the more quantity of enterprises are agglomerated to build the logistics services productive chains, the more attractiveness will be in this cluster (Sheffi, 2013). It is composed by different organization types: (1) Logistics firms that provide services to product distributors, retailers and manufacturing enterprises, (2) support enterprises for logistics services such as information technology, mechanical services, traceability services, specialized consultant services, custom services and others strongly related which will help the logistics chains work properly. Figure 1 shows the main actors on a logistics intensive operation.
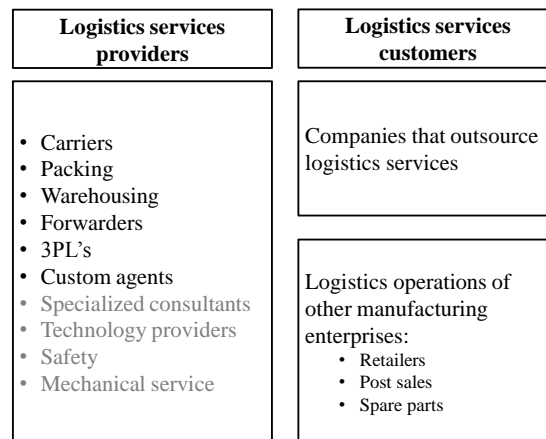
| **Logistics services providers** | **Logistics services customers** |
|---|---|
| • Carriers<br>• Packing<br>• Warehousing<br>• Forwarders<br>• 3PL's<br>• Custom agents<br>• Specialized consultants<br>• Technology providers<br>• Safety<br>• Mechanical service | Companies that outsource logistics services |
| | Logistics operations of other manufacturing enterprises:<br>• Retailers<br>• Post sales<br>• Spare parts |

**Figure 1: Logistics intensive operations main actors**
**Based on (Sheffi, 2013), (Rivera, Sheffi, & Welsch, Logistics agglomeration in the US, 2014)**

Operating as a cluster generates benefits for partner organizations. For a particular geographic area, a logistics cluster represents a strong source of regional knowledge, as a job source provider for full time employees in all organizational levels, and for employing professionals and technicians for the different chain operations. Indirectly, generates employment for information technology enterprises or logistics consultant services. On the other side, allows developing an advance logistics with a strong support on consulting, planning, networks design and information technology services, late customization or postponed operations. Last, horizontal integrations given on behalf of the cluster, allows to share the benefits with the industries who use the logistics cluster services (Sheffi, 2012). Altogether causes an accelerated innovation and more technology access which individually could not be accessed. This in turn, lead to increase trading volumes of participants and gain access to benefits, government support and other incentives for the cluster as a whole.

According to the intensity of logistics operations in the cluster, Sheffi (2012) proposes 4 transportation advantages in a logistics cluster using the logistics parks. A logistics park is a great land extension situated in an area of agglomeration and operative intensity, acting as a *hub* between different modal transports to switch mode from land to air or sea, to consolidate or decentralize loads, and operates logistics in a very great scale (Yang, Taudes, Deng Aimin, Chen, & Tian, 2013), e.g. PLAZA in Spain. The advantages proposed are the following:

(1) Achieve Economies of Scope in transportation: Direct cost transportation, symmetric freight, pick up destinations.
(2) Achieve Economies of Scale in transportation: Amortization of the equipment, fuel consumption, freight volume, transportation combination.
(3) Achieve Economies of Density in transportation: Using a *hub* as connector, centralize or decentralize loads, and *the last mile* efficiency (Chai & Yang, 2011), the most expensive one.
(4) Achieve Economies of Frequency in transportation: Increase the frequency of arrivals and departures to important hubs, and the definition of high frequency routes.

A logistics cluster, represents transportation economies. According to the density of transport mode, industrial activity or intensity of the commercial approach, a logistics cluster definition can be set. Furthermore, variables such as integration of logistics services across different sectors, companies association from synergy's point of view, distribution and consolidation of different goods diversifying transport modes are important to improve the competitiveness of companies that are associated in a cluster.

Other benefits of these types of clusters are the better access to repair facilities, higher expansion potential and the opportunities to share transportation capacity in order to satisfy costs reduction initiatives (van den Heuvel F. P., de Langen, van Donselaar, & Fransoo, 2012), (Buvik & Halskau, 2001), (Krajewska, Kopfer, Laporte, Ropke, & Zaccour, 2008).

### 3.4 Clusters and Competitiveness

According to some previously mentioned authors, one important interest to create a cluster is to increase the competitiveness of the operations of specific sectors, regions or even nations, so it is important to define the concept itself for further comprehension. Table 1 presents main concepts related.

For Aigner and Lloret, competitiveness of an organization is strongly associated with the financial performance, the more their profits exceed the average is considered a more competitive enterprise (Aigner & Lloret, 2013).
However, Barney (1991) argue that competitiveness is generated according to the strategic exploitation of the capabilities and resources of the organization, creating value for the company, as described Gardetti (2004), both cited by Aigner and Lloret (Aigner & Lloret, 2013) . For other authors, Scheel and Parada (2008), competitiveness is developed through the technology creation and innovation, creating clusters where the presence of customers stimulates the suppliers' competitive advantages development, making them to create "extended value systems" using very strong technology basis in the value creation.

It is important to clarify the difference between competitiveness and productivity. Productivity refers to an indicator that determines the competitive performance of the company, according to the use and management of resources affecting the overall system (Butdee & Tichkiewitch, 2008), while competitiveness in the industrial environment refers to the ability to obtain sustainable high incomes while maintaining and improving the standards of

environment and society (Peneder, 1995), therefore the power to create the necessary conditions for sustainable development of a region by creating new productive activities, new jobs and a better quality of life.

**Table 1: Main concepts and models provided by authors for competitiveness**

| *Main concepts* | *Authors* | *Proposed Models* |
| --- | --- | --- |
| • *Stimulating development of competitive advantages from suppliers* <br> • *Extended value systems based on technological innovation Increasing productivity of diverse transportation firms achieving efficiencies together* | Scheel & Parada (2008) | WIT (Wealth – Innovation – Technology) |
| • *Financial performance above average* | Aigner & Lloret (2013) | A best practices analysis |
| • *Strategic use of organizational resources and capabilities* <br> • *Creating value for the organization* | Barney (1991) <br> Gardetti (2004), cited by Aigner y Lloret (2013) | A best practices analysis |
| • *Drivers of productivity and prosperity of the economies of nations* <br> • *Impact of integrated logistics elements of competitiveness* | WEF Global competitiveness report (2016) | GCI (Global Competitiveness Index) <br><br> LPI (Logistic Performance Index) |

For this research purposes, the definition of Porter on Competitiveness referring to "the ability to produce goods and services of superior quality at a lower price than competing companies" will be taken. It also defines the root of the concept comes from productivity, claiming that the competitiveness of a region depends on the collective capacity of its industry to innovate and the way they compete (Porter M. E., 1990).

In a logistics cluster, competitiveness of a specific region can be achieved by improving the competitiveness of operations and services offered by the productive chains formed by Logistics Cluster's members located in a dense and specific geographical concentration, through the synergy between companies, the diversification of transport and integrations.

**3.5 Important factors to increase competitiveness in logistics clusters**

In order to considerate important factors to grow a logistics cluster for competitiveness in a specific region, the present research select and define those which had been designated by the authors who have studied logistics clusters and logistics integrations.

It is important to mention that logistics clusters had not been very deeply researched, in spite of the increase of publications extended in the past few years (Rivera, Gligor, & Sheffi, 2016).

Those factors are listed below in this research.

*(1) Diversification*:

As an important element of transport, diversification is considered a multimodal transport, which is the movement of goods in at least two different transport modes without directly handling the goods or products when switching from one mode to the other one (Lun, Lai, & Cheng, 2012). However, it is also to change your service provider if the initial carrier does not operate on specific routes, so they can exchange loads to serve certain routes without having to be operated by the same carrier without switching to a different mode. Table 2 presents main concepts related.

**Table 2: Main concepts and models provided by authors for Diversification**

| *Main concepts* | *Authors* | *Proposed Models* |
|---|---|---|
| • *Increasing productivity of diverse transportation firms achieving efficiencies together*<br>• *Intensity and accessibility of freight from different transportation modes and it relationship with job opportunities* | Van den Heuvel, de Langen, van Donselaar, & Fransoo (2012) | Likert's scale questionnaires<br>Cronbach's Alpha as a reliability proof |
| • *Regions with hubs for modal exchange intensify the logistics job opportunities* | Thomas (2003), Bowen (2008), cited by van den Heuvel, et. al, (2013) | Gravity- Based |

For this research, transport *diversification* refers to the capacity exchange with other logistics firms, both using other carriers' capacity and other carriers use their own fleet. (van den Heuvel F. P., de Langen, van Donselaar, & Fransoo, 2012). Diversification includes assets sharing, concentration and decentralization of loads; consolidate loads from different enterprises in diverse modes, and the influence on the indicator of capacity utilization to reduce transportation costs. Each member could increase their own productivity achieving efficiencies together.

*(2) Synergies*

The closeness and trust generated between different logistics firms establish partnerships or alliances that improve the performance of both companies that could not be achieved separately or would take longer. Van den Heuvel et. al (2012) mentions that location decisions in areas of high transportation demand, have important influence in their own performance and helps to increase confidence between participants to associate with each other, such as in a hub in logistics park, to provide cargo carriers opportunities to share their capacity and generate direct associations. Porter, Takeuchi & Sakakibara (2000) refers to an article in which Porter acknowledges that the cooperation is considered as a success factor for clusters if it becomes a shared value for members. Table 3 presents main concepts related.

**Table 3: Main concepts provided by authors for Synergy**

| *Main concepts* | *Authors* | *Proposed Models* |
|---|---|---|
| • *Collaboration as a shared value among members*<br>• *Value creation between the associates* | Porter, Takeuchi, & Sakakibara, (2000)<br>(Reve & Sasson, 2015) | A best practices analysis<br>Case studies |
| • *Associations on specific industrial sectors*<br>• *Collective learning capabilities gathered by the associated enterprises* | Ketels, Lindqvist & Sölvell (2006)<br>(Rivera, Gligor, & Sheffi, 2016) | A best practices analysis<br>Semi structured interviews |
| • *Associations according to closeness and trust generated between different logistics firms*<br>• *Logistics parks*<br>• *Similarity of transportation and logistics assets across firms in the cluster* | Van den Heuvel, de Langen, van Donselaar, & Fransoo (2012)<br>(Rivera, Sheffi, & Welsch, Logistics agglomeration in the US, 2014)<br>(Sheffi, Logistics Clusters Delivering Value and Driving Growth, 2012)<br>(Rivera, Gligor, & Sheffi, 2016) | Likert's scale questionnaires<br>Cronbach's Alpha as a reliability proof<br>Semi structured interviews<br>Case study |

For the synergy concept, the authors measurement are gather using Likert Scale polls, except for logistics parks, used gravity-based.

The definition of variable *transportation synergies*, refers to the establishment of strategic alliances to maximize their strengths to integrate transportation chains that offer a more complete and productive service for the benefit of their customers and themselves (van den Heuvel F. P., de Langen, van Donselaar, & Fransoo, 2012). Synergies not only take place between freight carriers, also with service providers through the logistics value chain and for the commercial trade, including actors such as 3PL's, warehouses for inventory, agents and customs services, forwarders, including supply chains of other clusters.

### *(3) Geographical agglomeration location*

This variable is present in many studies that analyzed the results of operating logistics clusters. Since it is one of the most studied constructs, and the importance of this factor as part of the cluster definition, several researchers have analyzed the impact differently. Finally, the study made by Porter (2003) in his paper "The Economic Performance of Regions", linked to construct the dependent variable called competitiveness.

The definition of this variable refers to the density of logistics companies' concentration in a specific geographical area where the firms agglomerate, creating a global network of activities that create value (Sheffi, 2013). Furthermore, these integrated companies intend to share transport and logistics services in order to be more efficient given its proximity and connectivity in an specific geographic region of operation to respond demand changes and variations (Sheffi, 2012), (Rivera, Sheffi, & Welsch, Logistics agglomeration in the US, 2014). These concentrations can be determined according to the location coefficient and concentration of the agglomeration (van den Heuvel F. P., de Langen, van Donselaar, & Fransoo, 2011). Finally, with these concentrations in specific geographic locations is expected to impact positively on development and economic performance of a particular region (Porter M. E., 2003). Table 4 presents main concepts related.

**Table 4: Main concepts and models provided by authors for Geographical agglomeration location**

| *Main concepts* | *Authors* | *Proposed Models* |
|---|---|---|
| • *"The Economic Performance of Regions", links the construct with the dependent variable named competitiveness* | Porter (2003) Harvard Business School, U.S. Economic Development administration & Porter, M. (2017) | LQ: Location Quotient Cluster Mapping web tool |
| • *Magnitude of the concentration of intensity in logistics activity* <br>• *Logistics concentration generated from the participation of external economies* <br>• *Firms located inside logistics clusters have better access to repair facilities and a higher expansion potential* | van den Heuvel et. al (2012) Rivera & Sheffi (2014) Rivera, Gligor & Sheffi (2016) | HCLQ: Horizontal Clustering Location Quotient LEP: Logistics Establishment Participation) Semi structured interviews |

For this research purposes *geographical agglomeration location* is defined as a group of logistics enterprises and related services firms, located in a defined geographic area where they are congregated to share logistics assets and services in order to become more efficient, and to improve logistics and transportation connectivity contributing to the progress of the economic performance of this particular region.

*(4) Horizontal Integration*

Horizontal integration occurs when there is an interaction of enterprises between different business sectors, as a part of a production chain that adds value to the product without being part of the same industry. For example Mercado and Martinez (2010) mention that the transportation industry and logistics is considered as cross sectorial, because there are industries with specialized logistics needs that can be addressed and attended directly by the transport sector.

Due to logistics services are integrated from the transport of input goods and their intermediary services, transportation services of package delivery, multimodal transport and distribution of finished goods, the storage services, product load and unload, packaging, brokerage and customs services for international trade; it is likely to be part as actors in supply chains for different industries. Table 5 presents main concepts related.

**Table 5: Main concepts and models provided by authors for Horizontal Integration**

| *Main concepts* | *Authors* | *Proposed Models* |
|---|---|---|
| • *Opportunity cost reduction and transportation productivity through horizontal integration* <br> • *Opportunity to add value through postponement activities* <br> • *Perform reverse logistics activities* | Cruijssen, Cools & Dullaert (2005) <br> (Rivera, Gligor, & Sheffi, 2016) | A best practices analysis <br> Semi structured interviews |
| • *Business interaction between different sectors.* <br> • *Logistics operations are inter sectorial* | Mercado y Martínez (2010) | Census analysis |
| • *Patterns to integrate horizontally logistics services successfully* | Schmoltzi y Wallenburg (2011) <br> Verdonck, Caris, Ramaekers, & Janssens, 2013 <br> Paulraj, Chen, & Lado, 2012 | Likert scale poll <br> DDSCCP Branch-and-cut algorithm <br> Multi-commodity flow problem model <br> Inverse Optimization |

*Horizontal integration*, is defined as the integration of companies offering similar services, in this case the logistics services, in order to serve different markets while maintaining the independence of their own organization (Schmoltzi & Wallenburg, 2012) (Cruijssen, Cools, & Dullaert, 2005), in order to maximize cost reduction through cooperatives among independent companies (Schmoltzi & Wallenburg, 2011).

## 4. Conclusions and future research

This research investigated the main concepts and authors' proposals related to clusters and primarily logistics clusters, and describes a definition. The theoretical review indicates that this category of clusters is promising and very important to gain competitiveness as a region, but also had not being fully researched, supporting the basis for the identification of a knowledge gap in the literature and the nonexistence of a well-defined model empirically tested to set the basis to develop a logistics cluster which increases regional competitiveness.

The present study findings contributes to identify and describe important factors to develop a logistics cluster to increase regional competitiveness, and reveals benefits of this activity sector clustering.

Nowadays, is not enough to compete as individual firm, but creating associations and interconnections with firms of the same industry or related, the academy and government; makes possible to have access into new economies, develop of new technology capabilities and more sophisticated markets, regardless the enterprise size or experience. The knowledge acquired by being a cluster member also is accelerated and deeper in innovation.

Logistics clusters are taking importance and relevance since global supply chain operations, and are becoming a new strategic way to compete in very diverse markets, bringing back to members rapid response to changing business environments, innovation dynamics, new business opportunities and strong integration to achieve the competitive challenges and improve the firms performance. Other important contribution is the mention that through putting together the (1) Geographical agglomeration, (2) horizontal integration, creating (3) synergies between members and (4) diversifying transportation, the firms interconnected in a logistics cluster become more efficient and competitive in their operations and attractive to serve other industries, accomplishing economies of scale in transportation and other logistics operations, their individual productivity tends to increase consistently by operating higher volumes and creating direct and indirect new job positions, at the end, the economic development of the region becomes more important.

For managers, this research highlighted that logistics clusters can benefit to improve enterprises performance by reducing costs and sharing knowledge through collaboration and logistics services sophistication allowing firms to take advantage of the given opportunities presented by logistics clustering.
In the further years, logistics clusters for competitiveness in wide regions would become a key success factor to be a player in the very dynamic environmental challenges.

For future research, this study contributes as a baseline to continue developing more investigation related to this topic, and to test in correlational and explicative studies the relationship between the factors described and the increase in competitiveness through a logistics cluster.
The opportunity to develop more empirical studies in this area of study supported by the operationalization of the variables (factors), to design a reliable measurement instrument and the process to stablish the relevance of each variable and to test the relationship among theory and measurement results.
The expected product at the end will be a model of related factors that influence positively on logistics cluster for the Nuevo León region.

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