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Final Thesis

The importance of Clusters and Cluster policies in the design and implementation of Smart Specialization Strategy in the Latin-American region.

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A mi familia, mi novia y amigos más cercanos.

Nunca olvides a dónde vas, ni de dónde vienes, la vida da muchas vueltas. Crece y vuela alto, pero con los pies en la tierra.

Cit. Mauricio Venoist

Index:

Introduction

During this dissertation it will be discovered the world and the role of Cluster and Smart Specialization Strategy in Latin America. Even if the South American continent is not in a such positive socio-economical condition, trough the realization of Treaties and Agreements with the European Union and following its model , it was and is possible to implement good practices and policies to improve the quality of International Trade in Latin America.

In this dissertation it will also be analysed the effect of RIS3 (Research and Innovation Strategies for Smart Specialization) in the Latin American economy, which result particularly essential for small businesses.

Related to the Cluster theme, it can be said that they are a huge reference point for the National industries and trade. Since they are an agglomeration of firms, they are able to create a general sense and atmosphere of well-being for the related cities and communities, influencing both the social and the economic aspects. It can be said that they are very important for the Latin trade panorama, since they brought a refresh in the general commercial situation.

It is also interesting how the relationship with the UE has led to an improvement of Trade policies and has created a new positive environment.

Chapter I: Clusters & Cluster Policies, Smart Specialization Strategies: definition, main characteristics, and its importance for the economic development.

1.1. What is a Cluster, and which are its main characteristics?

Since its discovery and development among years, clusters have been considered as an important feature for the development and enhancement of regional and national competitive strategies. Nowadays, industry cluster programs are well established in developed and developing-countries. According with the definition of professor Michael Porter, a cluster is *"a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and externalities"* (Porter M. , 1998)[1]; thanks to this definition, it can be established an initial idea of what does really mean a cluster and which are its characteristics. Moreover, the definition introduces an important idea of competition and cooperation between firms; it is also significant to say that *'proximity'* between them plays a crucial role, even though, the most important relationships are not limited only by firms.

Professor Porter also established that *"clusters often include firms in downstream industries; producers of complementary products; specialized infrastructure providers; government and other institutions providing specialized training, education, information, research and technical support (such as universities, think tanks, vocational training providers); and standard setting agencies. Government agencies that significantly influence a cluster can be considered part of it."* (Porter M. , 1998)[2]
Moreover, one of the main characteristics of clusters is to focus in the increase of the firm's productivity in a way that they can compete on their local and global environment; taking into consideration important aspects of strategic management; it can be included finished product or service companies, suppliers of specialized inputs

[1] Porter, Michael E., On Competition, Updated and Expanded Ed. Boston: Harvard Business School Publishing, 2008.
[2] Porter, Michael E., Clusters and Competition: New Agendas for Companies, Governments, and Institutions., Harvard Business School Working Paper, No. 98-080, March 1998.

like components, machinery and services; financial institution; and firms in related industries. Another aspect that should be stressed is that clusters are dynamic, it means that they can change their structure if the industries around them change, or by consequence of an external condition arise or introduction. Besides, they can display a shared identity and future vision. Also, they can make that governments may develop policies to assist its development, especially where market-failure conditions may frequently be presented.

A business cluster, or the agglomeration of several clusters can be considered as the main strength in most regional economies. It is for these reasons that they can be considered as a vital economic force; the development and upgrading of them are considered as important economic aims for governments and other organizations involved in regional economic progress.

Now that a clear definition of cluster has defined, the main questions that comes to mind are how clusters are created and how they can become highly competitive in their industries. In order to answer these questions, it should be needed to mention, once again, that related firms and industries have tended to locate in close geographical proximity for a number of reasons; for understand this concept, we have to mention the literature that classical economist Alfred Marshall established in his book *'Principle of Economics'.* He mentioned that *"when an industry has thus chosen a location for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighborhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air …."* (Marshall, 1890)[3]. In addition, he also stated that *"Looking more closely at the economies arising from an increase in the scale of production of any kind of goods, we found that they fell into two classes–those dependent on the general development of the industry, and those dependent on the resources of the individual houses of business engaged in it and the efficiency of their management; that is, into external and internal economies."* (Marshall, 1890)[4]. According with these two statements, it is required to

[3] Marshall, Alfred., Principle of Economics, (Book IV, Chapter X), 1890.
[4] Marshall, Alfred., Principle of Economics, (Book IV, Chapter XII), 1890.

stress that, Alfred Marshall was one of the fist economists in identify the advantages of *'spatial clustering'*. These advantages, also called as trinity of agglomeration economies, are: *input sharing* (the provision of specialized inputs from suppliers and services providers), *labor market pooling* (the existence of a pooled market for specialized workers), and *knowledge spillovers* (the rapid flow of business-related knowledge among firms) (Marshall, 1890). As can be seen in (Figure 1).

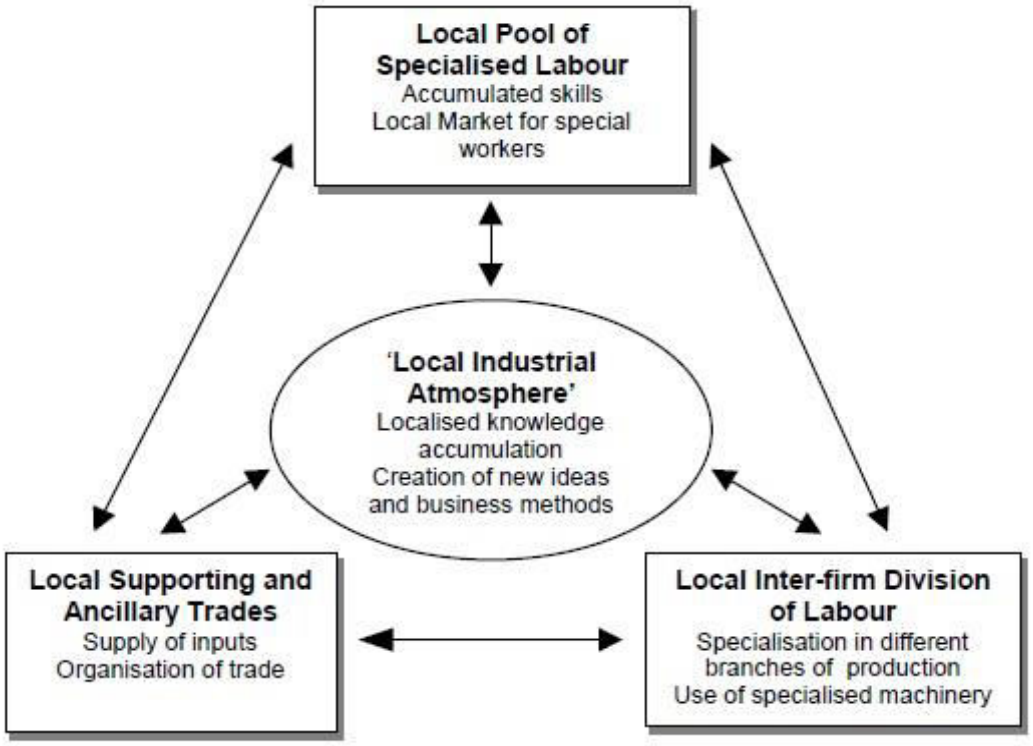

Figure 1: Marshall's Triad of External Economies of Industrial Localization (Based on Marshall, 1890, book: IV, chapter: X)[5]

In effect, these Marshallian agglomeration economies are considered as *'localization economies'* that arise when related firms from the same industry cluster together in close spatial proximity. However, since the Marshall's work has been of extremely importance for the development of these theories among the years, it was not clearly explained how the industrial localization process actually begins; which are the reasons of why this process starts in certain areas and not in others; and, what should firms

[5] *Martin, Ron., Sunley, Peter. (2001). Deconstructing Clusters: Chaotic Concept or Policy Panacea?, Journal of Economic Geography, University of Cambridge, in collaboration with the University of Edinburgh, pg. 7.*

expect when they compete at a local or regional level. For this reason, we need to also mention the literature that professor Michael Porter have proposed for a better understanding of the industrial clusters. Professor Porter established that the industrial clusters meaning and purposes, reside in the collaboration between four sets of features that create a *'competitive diamond'*. These features, as shown in (Figure 2) are: *firm strategy*; *structure and rivalry*; *factor input conditions*; *demand conditions*; and *related and supporting activities* (Porter M. E., 1990). The more advanced and powerful interactions between these four features are, the larger will be the productivity of the firms concerned.

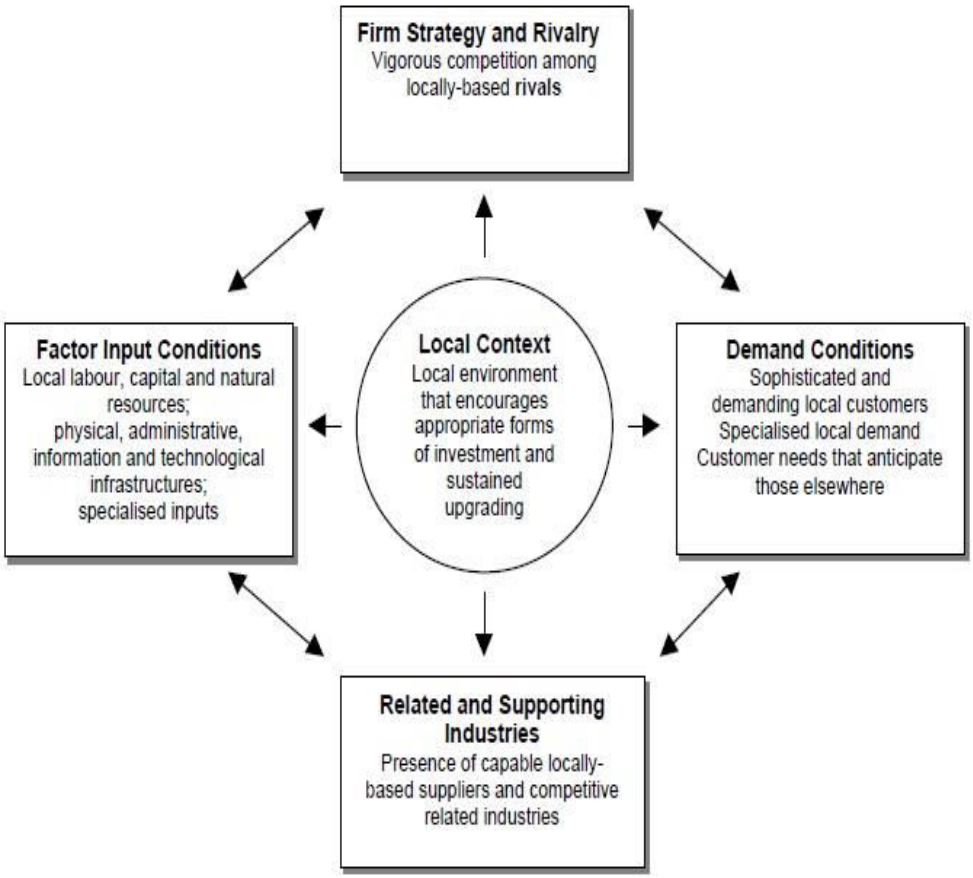

Figure 2: Porter's Competitive Diamond of Local Industrial Clustering (Based on Porter, 1998, chapter: X)[6]

[6] Martin, Ron., Sunley, Peter. (2001). Deconstructing Clusters: Chaotic Concept or Policy Panacea?, Journal of Economic Geography, University of Cambridge, in collaboration with the University of Edinburgh, pg. 8.

It has been determined that the competitive diamond can be recognized as the making driving force for cluster development, at the same time as, the cluster operates like the spatial manifestation of the competitive diamond. We can conclude that, the efficient disposition of the diamond produces local concentration of leading rival firms, which in turn magnifies and intensifies the interactions between the features. So, it exists a close attraction between the two theories established before, *'competitive diamond'* of local industrial clustering developed by Porter and the *'Triad of External Economies of Industrial Localization'*, which complements each other, and establishes a clear assumption of how clusters may achieve competitive advantages for success in today's global economy.

1.1.1 Types of clusters & cluster policies

There exist a variety of types of clusters, and each type involves different configurations, like for example, the types of competition that may afford and the collaboration process within co-located firms. In fact, the innovation output, product of the co-located collaboration firms, and the threats in capturing the "innovation rents" (Schumpeter, 1911) may vary among the types of clusters. According with these facts, it can be determined that "*To each type of cluster corresponds a different model of organization of firms, who are the dominant firms, the type of ties connecting firms, the strength of the ties among entrepreneurs and employees operating in the cluster, forms of governmental intervention, and so forth"*[7]. All the characteristics mentioned before are extremely important for the achievement of the innovation output and the accomplishment in capturing the rents from innovation.

According with Markusen' work (1996) in her paper: *"Sticky Place in Slippery Space: A Typology of Industrial Districts",* she established that exist four types of clusters: *"the marshallian and italianate type, the hub-and-spoke, the satellite industrial platform, and the state-anchored clusters"*[8]*.* Markusen described and grouped these types of

[7] Ferreira, Manuel., Serra, Fernando., Costa, Benny., Maccari, Emerson., Couto, Hergos., Impact of the Types of Clusters on the Innovation Output and the Appropriation of Rents and Innovation, Journal of Technology Management & Innovation, 2012.

[8] Markusen, Ann, Sticky Places in Slippery Space: A Typology of Industrial Districts (1996). Economic Geography, 1996.

clusters according with specific characteristics that firms or firm's environment may have, those characteristics may differ since the configuration of the firm; its internal or external orientation; the firm's relationship within its cluster's environment along with agents outside the cluster; till characteristics as: governance structures; role of the state; or the role of large firms and its amount of cooperation for the creation of business relationships.

Another authors have also proposed their typologies of clusters, as the case of Enright's work (2000), in his paper: *"Regional Clusters: What We Know and What We Should Know"* in which he suggested other 5 types of clusters, which they are: *"working or overachieving clusters; latent or underachieving clusters; potential or wannabe clusters; policy driven clusters; and 'wishful thinking' clusters"*[9]. As follows, there will be a description of the four types of clusters labeled by Markusen[10]:

Marshallian and italianate clusters: these clusters also called as *"Marshallian industrial districts"*[11] are composed by small, and medium-size companies. These companies are connected between them and share a pattern of cooperation-competition agreement, raising a collaboration environment among other co-located companies. Furthermore, these agreement among firms make that the flux of resources, capabilities, and employees could be successful. Another important characteristic could be the successful exchange innovation and cost sharing, creating a list of strategies ready for capture and improve the innovation that comes from social and business interactions.

Hub-and-spoke clusters: these types of cluster are characterized for being composed by few, vertically, and integrated large firms with their suppliers. It means that, the principal *hub* company is linked to its smaller companies in which it can disclose a dominant power; which have the financial power and powerful position to develop and protect any kind of substantial innovation. Furthermore, the innovation flux between these firms is mainly correlated with the hub firm.

[9] Enright M.J. Regional Clusters: What We Know and What We Should Know, 2003.
[10] Ann Markusen (1996) Sticky Places in Slippery Space: A Typology of Industrial Districts, Economic Geography, 72:3, 293-313, DOI: 10.2307/144402
[11] Becattini, G. (2017). The Marshallian industrial district as a socio-economic notion.

In the case of employees' environment, mobility flux is very low, giving as consequence that the hub firm can develop only in-house innovation, proposing the right to protect innovation for enhance potential future benefits.

Satellite industrial platforms: they are structured by the existence of segmented, small, trading and cooperating clusters that enjoy of many resources outside the same. Besides, these types of clusters are the result of public policy intervention for attract multinational corporations. As for example, the high-technological firms that want to use and earn profits from the resources' exploitation found inside the clusters. Since satellite platforms are frequently dominated by foreign multinational corporations, they have little intra-clusters interactions between other subsidiaries that belong to the same group.

State-anchored industrial districts: These clusters exist as the consequence of governmental government initiatives and investments, organized around institutions such as universities, ports, and military base and their separate networks of suppliers.

These types of clusters are settled by governmental initiatives as '*development paths'*, they are structured around public organizations, university's research departments, among other institutions. Commonly, local governments attempt to promote this type of clusters by linking public institutions with them, for anchor the local economic activity. For this reason, the development of the same will depend of these local institutions, likewise of their cluster's characteristics.

This category of cluster has different characteristics respecting the other types. They completely will depend to their anchor-institution. So, if the institution is more innovation-driving, the cluster will need more innovative dynamism, besides, be more knowledge intensive; it will be the same if the anchored-institution will need less innovation levels or knowledge demanding.

Now that it has been considered which are the types of cluster, the next assumption that are needed to take into consideration are the cluster' policies.

Governments are not the only players for the cluster's development in the area that they manage, they play a significant role. For this reason, governments will always need a strategy for promote and improve clusters' competitiveness. Also, they should

support all clusters that respond to one of the main clusters' characteristics, which is the commitment of cooperation between firms; managing and establishing a distribution of assets to build on a strategy for innovation development. Another important aspect should be that government must be interested in clusters' initiatives, being a kind of facilitator and participant, not only an entity that impose rules.

"It may happen that, cluster-based economic policies are sometime confused with centralized industrial policy approaches."[12]

Taking into consideration this statement, it is needed to create a clear vision about the two approaches as follows: By first we mention the centralized industrial policies, they focus on areas of high market or technology demand; once the policies have managed the competition issues, by for example: creating subsidies, applying protectionism, etc., and have also supported domestic market, it should be expected that the most attractive local markets will face an increasing in global competition. Additionally, this approach needs a constant financial commitment by the public sector. However, the approach has a failure rate, it tends to create a low sustainability rate, even though, there exist a positive short-term impact at the beginning. On the other hand, we mention the cluster-based policies, they focus on the enhancement of local assets implementation, capabilities, history and geographic location; and are available to all clusters that belong to the area where the policy is introduced. They play a fair-minded role, performing a partial role in terms of ownership; their success will depend on the involvement and contribution by all the players that compose the cluster, and of course, by the government's engagement in all the geographic areas. It is worth to mention that, although their impact would be at low level at a first instant, it would rise over time and would be successful in future.

It can also be considered other types of policy initiatives that were introduced to take benefit of cluster's economic potential , these policies initiatives can be grouped in three categories: policies that can leverage clusters; policies that can strength clusters; and the last, policies that can create clusters.

[12] Ketels, C.H.M. and Memedovic, O. (2008) 'From clusters to cluster-based economic development', Int. J. Technological Learning, Innovation and Development, Vol. 1, No. 3

It can also be considered other types of policy initiatives that were introduced to take benefit of the cluster's economic potential , these policies initiatives can be grouped in three categories: policies that can leverage clusters; policies that can strength clusters; and the last, policies that can create clusters.

In the case of policies that can leverage clusters, the government builds a strategy or set of strategies for improve the performance and efficiency of its economic policies focusing in regional developments and diversification levels. SEZ (Special Economic Zones)[13]; Industrial Parks; Innovation zones, are examples of areas that were created from designated clusters, that at the same time, were improved by the policies established by governmental strategies. These cluster initiatives can be presented to establish economic policies in a more effective and encouraging way.

Policies that can strength clusters, instead, focus on improving the competitiveness of agglomeration economies that creates value-added. In this case, the cluster initiative plays a fundamental role in organizing the collaborative actions made by firms, educational institutions, governmental agencies, etc. This means that, the cluster success will fundamentally depend on the engagement that all these organization will make; taking into consideration and executing all the goals established in the cluster initiative's agenda. For do so, firms within the cluster and collaborative players that belong to it should be aware of the importance of interaction platforms; besides, be more active in the collaboration between them.

By policies that can create clusters, history can show to us that in the 90s, because of the boom of high-tech industry, some regions tried to create cluster from zero, in order to achieve the beneficial success that this industry could produce. Of course, policies were an important fragment of this system, since they could finance significant investments in specialized infrastructure; besides, provide incentives and protection against competitors for a certain period. Unfortunately, these kinds of initiatives failed in many circumstances. Then, it was established a better approach between policies incentives and the new clusters, this approach consist in improve the complete

[13] The SEZ are geographically delimited areas within which governments facilitate industrial activity through fiscal and regulatory incentives and infrastructure support. More information about SEZ in http://www.oecd.org

business environment conditions, by a set of upgrading factors, as for example, upgraded skills; better accessibility to infrastructure; better distribution of government rules and regulations, among others. In conclusion, it can be established that: the empirical analysis of cluster initiatives supports

the view that such efforts are much more likely to succeed if they operate in a supportive business environment (Lindqvist, 2003).

1.1.2 Economic importance of clusters

The advantages or economic effects that occur from cluster's development or implementation of an innovative policy may be also correlated to other beneficial characteristics, as external economies in the manner of specialized labor markets; input suppliers; knowledge spillovers, getting as result an increase of innovation and productivity benefits. Moreover, spatial co-location plays an important role in which they are linked to a set of high-performance features, as for example, a better access to specialized and productive employees. Besides, intermediate industries provide firms' facilities with vast access to specialized materials; components; marketing services; business services. *"It is also important to say, that technological externalities arise through shared technological information and knowledge spillovers"* (Langlois, 1996). Other kinds of advantages associated with clusters derive from more favorable market conditions, namely *"the presence of demanding customers, greater rivalry and complementarities in products and technologies"* (Porter M. E., 1998).

Given all the assumptions established till now, it should be considered that cluster development has a positive impact on regional economic growth. Though, which would be some of the direct and indirect benefits of developing a cluster. In order to answer this assumption, we can consider the following features: *"drive competition; attract financial resources; growth of employment and entrepreneurship; improve company's operation efficiency; foster innovation and tacit knowledge sharing"*[14] as the main benefits of clustering, giving a brief description to each benefit as follows:

[14] Quercus Group (2015). Benefits of clusters. More information about in http://quercus-group.com

Drive competitiveness: within clusters, it can be found a lot of competitors that generally belong to the same niche. It is for this reason that firms always look to maintain their quality standards high, keeping a high level of innovation in their products or services.

Attract financial resources: the financial resources may be stakeholders that are looking for new investments and entrepreneurial ideas, given that clusters are formed by a vast area of ideas development, it matches perfectly with what stakeholders are looking for. Moreover, it is easier to convince to invest on a product to investors and then sell to consumers, when the clusters are characterized of an established reputation.

Growth of employment and entrepreneurship: currently, *"38% of European jobs are concentrated around clusters"* (European Cluster Observatory, 2011). Moreover, the most famous clusters around the world usually have a high density of start-ups; producing an enormous increase of entrepreneurial activities and employment.

Improve company's operation efficiency: suppliers and firm's resources usually work in a closely environment within the clusters, this characteristic may accelerate innovation growth and productivity. Besides, firms frequently decide to join efforts for research and development process, lowering the use of a huge amount of resources.

Foster innovation and tacit knowledge sharing: in cluster's environments, firms develop their value chain at local level; this characteristic produces that they can share resources and collaborate to arise local productivity. Furthermore, the relationship among firms creates an atmosphere where information can be simply share or broadcast.

1.2. What are the Smart Specialization Strategies (S3), and which are their characteristics?

According with the OECD[15] thought, *"the Smart specialization is an industrial and innovative framework for regions at economical level, which its principal aim is to prove that combining tailored conditions of an industrial framework, combined with R&D investments, can influence the social, scientific and technological specialization of a region and, in consequence, of its productivity; attractiveness; and economic grow path to potential investors"*[16].

The OECD claims that Smart Strategies follow a *"logical continuation in the process of deepening, diversifying and specializing of more general innovation strategies, taking into account regional particularities and inter-regional aspects, and thus a possible way to help advanced OECD economies – as well as emerging economies- restart economic growth by leveraging innovation led/knowledge-based investments in regions."*[17]

According with the Smart Specialization literature established by the European Commission, it is an innovative approach that has as objective to increase growth and jobs in Europe, by allowing to each region to identify and develop its own competitive advantages. Thanks to partnerships and agreements made with european member states, Smart Specialization tries to work along with local authorities; business spheres; society; in a 'bottom-up' style for reach an application of long-term growth strategies supported by EU funds.

The (Smart Specialization) idea was established and applied along with the renewed Cohesion policy formed by the European Commission. The *'s'* that sustain the idea stands for: *smart*, which means to identify the region's own strengths and relative assets; *specialized*, which provides a sort of significant research and innovative investment in competitive areas; *strategic*: which defines a common vision for regional innovation.

It is also worth to say that it is a place-based approach, it means that, one main characteristic that possess would be the identification of strategic areas that can be potentially exploited, based on the strengths that these areas may have and the level

[15] OECD (Organization for Economic Co-operation and Development) is an international organisation that works to build better policies for better lives. More information about OECD in https://www.oecd.org

[16] https://s3platform.jrc.ec.europa.eu

[17] OECD. (2013) Innovation-driven Growth in Regions: The Role of Smart Specialisation. pg. 17

of entrepreneurial discovery process that may reach, thanks to investors' involvement. Moreover, other characteristics of Smart Specialization are *"its outward-looking for incorporate a wide view of innovation; also, technology-driven approaches that can be supported by monitoring mechanism"*. [18]

In order to understand better this approach, we can take as reference what the President of the European Commission said about the Smart Specialization and its importance for the future of the european sustainability; he established that: "*globalization and the impact of new technologies on society and jobs have profound implications for Europeans' daily lives in each and every one of our regions, cities and rural areas. What we call smart specialization strategies enable regions to hold their own by developing their assets and helping their local businesses access global supply chains, particularly in industry.* (Juncker, 2017)[19]"

1.2.1 The S3 approach inward the European Union

Since the Smart Specialization concept has been agreed as a territorial development model of widespread application in many regions of the EU, characterized for be an adaptive model that accomplish and meet, in a positive way, the new competitive conditions that globalization pursuit.

It can be established that other characteristics that this model pursuit in the EU are: the methods for identify special characteristics and assets that a region, or individual countries, may retain and would like to promote; focus on the competitive advantages; exploit the resources and capabilities, among others.

Furthermore, since 2011, the European Commission has settled a plan which provides advices to regional and national authorities on how to develop and execute their smart specialization strategies; by a tool called 'Smart Specialization Platform'. This Platform enables mutual learning between EU and its member states. Moreover, it brings data gathering, analysis, and networking opportunities for over 170 european regions and 18 national governments. Additionally, it supports bottom-up collaborations

[18] More information about S3 Platform can be found at https://s3platform.jrc.ec.europa.eu
[19] Jean-Claude Juncker is a Luxembourg politician, serving as President of the European Commission from 2014 to 2019.

concerning businesses and researchers along value chains within Europe. Besides, they are promoted as a supportive plan of regional funding for innovation in specific smart specialization areas. The principal features may be that regions join forces and pool resources based on corresponding smart specialization priorities in high valued added sectors.

Some key facts that have been achieve till now are that 120 smart specialization strategies have been developed; over €67 billion have been available to sustain these strategies, under the European Structural and Investment Funds and national/regional funding. Moreover, expected achievements by 2020 would bring, (more or less) 15.000 products to market; create 140.000 new start-ups and 350.000 new jobs.

Agreeing with the *Smart Specialization literature*, it has determined that a strategy for smart specialization may be constructed according with the following key principles:

"Smart specialization is a place-based approach, meaning that it builds on the assets and resources available to regions and Member States and on their specific socio-economic challenges in order to identify unique opportunities for development and growth; To have a strategy means to make choices for investment. Member states and regions ought to support only a limited number of well-identified priorities for knowledge-based investments and/or clusters. Specialization means focusing on competitive strengths and realistic growth potentials supported by a critical mass of activity and entrepreneurial resources; Setting priorities should not be a top-down, picking-the-winner process. It should be an inclusive process of stakeholders' involvement centered on "entrepreneurial discovery" that is an interactive process in which market forces and the private sector are discovering and producing information about new activities, and the government assesses the outcomes and empowers those actors most capable of realizing this potential; The strategy should embrace a broad view of innovation, supporting technological as well as practice-based and social innovation. This would allow each region and Member State to shape policy choices according to their unique socio-economic conditions; Finally, a good strategy must

include a sound monitoring and evaluation system as well as a revision mechanism for updating the strategic choices."[20]

Additionally, the strategies applied for the innovation's researches within the EU territory are financed by the European Regional Development Fund (ERDF). These funds must be applied only if they can be fitted within an effective and efficient area that can provide future investment's returns.

On the other hand, the priorities that the strategies may give to their economic activities may vary from region to region, or by the characteristic that each country may has. It is to note that, even thought, a set of priorities may have been identifies at a first instance when the strategy is designed, there exist the possibility that those priorities could be modified in the course of the action because of the acquisition or development of new information that can be helpful for the enrichment of the strategy itself. These priorities could be designed as knowledge approaches or strategically actions recognized in specific fields as market niches; clusters; ICT areas; social and environmental issues; among others.

Focusing in other activities like, for example, technological and innovation research, some priorities like social, organizational, market and service innovation, or practice-based innovation, compute a significant a role within the S3.

Furthermore, it also includes activities like the exploitation of niches by an innovation improvement in traditional fields, through the development and application of new businesses or organizational models; obtained by the acquisition of innovation from tacit knowledge and experiences.

The intention would be to realize satisfactory conditions for entrepreneurship development, encouraging to support all types of operations designed by firms, at local and international level, for the development of inter-firm; inter-cluster; and cross-frontier collaboration.

[20] Citation took it from the Smart Specialization website https://s3platform.jrc.ec.europa.eu/what-is-smart-specialisation- All rights reserved to © European Union website, 1995-2019. https://europa.eu/

It can be reviewed the concept of smart specialization as: *"a prioritization that takes place, at a territorial level, in economic activities, scientific areas and technological domains that are potentially competitive and generators of new market opportunities in a global context versus the prioritizing that other territories carry out"*[21]. Moreover, this concept should be understood as "not only the search of a pure specialization in relation to the location economies within a territory, but, rather, as a diversified specialization in relation to the opportunities derived from the related variety present in said territory"[22] (McCann, 2011). In (Figure 3) can be found a conceptual body of smart specialization.

[21] Barroeta, Belen, et al. (2017) "Innovation and Regional Specialization in Latin America". JRC Technical Reports.

[22] McCann. (2011). "Notes on the Major Practical Elements of Commencing the Design of an Integrated and Territorial Place-Based Approach to Cohesion Policy". Economic Geography.

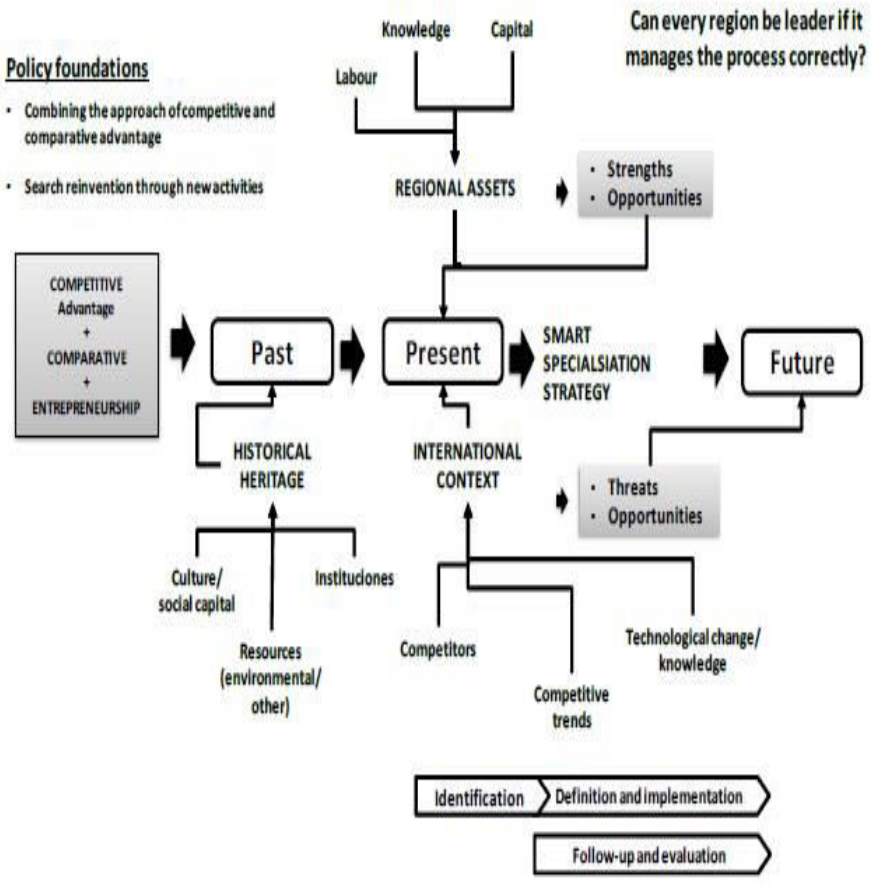

Figure 3: Conceptual logic of smart specialisation models in the framework of regional strategy definition[23]

1.2.2 Importance of the RIS3 (Research & Innovation Strategies for Smart Specialization)

Smart specializations have been strongly supported by synergies experts' groups settled by the European Commission[24], for ensuring the interests of the EU and beware

[23] https://s3platform.jrc.ec.europa.eu

[24] The European Commission is the EU's politically independent executive arm. It is alone responsible for drawing up proposals for new European legislation, and it implements the decisions of the European Parliament and the Council of the EU.

of the *'structural funds'* got for introduce an interest of building capacities and provide a degree of excellence.

A clear definition of RIS3 would be established as a unified, "*place-based economic transformation agendas*"[25] that aim to achieve the following statements displayed in (Box 1) [26].

- They focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development, including ICT-related measures;
- They build on each country's/region's strengths, competitive advantages and potential for excellence;
- They support technological as well as practice-based innovation and aim to stimulate private sector investment;
- They get stakeholders fully involved and encourage innovation and experimentation;
- They are evidence-based and include sound monitoring and evaluation systems.

Box 1: Definition on RIS3

All these characteristics are pertinent for the development of the european program *"Horizon 2020"*[27]. Since that, one of the main characteristics that the strategy emphasizes is to transform the future of the EU as a competitive and economically

[25] National/Regional Innovation Strategies for Smart Specialization (RIS3). Cohesion Policy document 2014 – 2020.
[26] Foray, Dominique., et al. (2012) "Guide to Research and Innovation Strategies for Smart Specialization (RIS 3)" Smart Specialization Platform.
[27] Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

developed territory based on knowledge and innovation core competences. Additionally, RIS3 are directly interconnected with the achievement of sustainable growth, by which is require considerable levels of investments in order to reach a *"resource-efficient and low carbon economy"*[28]

In addition, the council of the EU has emphasized the vision of the RIS3 *" with each region building on its own strengths, to guide priority-setting in national and regional innovation strategies, as well as cross-border cooperation where appropriate' and invited the Commission 'to advise Member States on possible improvement of the performance of their national innovation systems and with the implementation of smart specialization strategies"*[29]

In conclusion, RIS3 address the aims of the EU cohesion policy, for this reason is important to apply this program giving to regions a role play in the knowledge economy, it would mean that they can identify and evaluate comparative advantage in an easier easy than before; bringing new design and creation formulas for the industries; offer new business models; and bring a higher social and service innovation.

Chapter II: The Concept of Cluster in Latin-America: overview, political context, and economic development among the years.

2.1. Overview of which are the cluster conditions inner the region

The major part of the firms that can be found in Latin America are characterized for being small, and medium sized organizations. Moreover, these types of businesses

[28] https://www.eea.europa.eu

[29] Council Conclusions on Innovation Union for Europe, 3049th Competitiveness Council meeting. Brussels, 26, Nov. 2010.

represent almost 90% of all firms presented in the region. In consequence, 50 percent of total employment rate established in the region makes part of them. However, the contributions of these SMEs[30] to gross domestic product does not correspond with the commitment of these firms in the business structure and at an employment level, because there is a large gap between small, and medium sized firms and large firms in productiveness and competitiveness. There exist some reasons why this gap may happens, some of the reasons would be: a low productivity level due to the small scale in which these firms operate; management's inefficiency; lack of innovative technology; high level of disorganization in business knowledge and experience that limits access to gross markets; low level of cooperation between related firms; weak support by institution that should develop a sustainable agenda for growth; and lack of market's regulations, which benefits only big corporations. Furthermore, in a context of increasing openness and globalization, such as that experienced by Latin America, a sector of small, and medium sized firms with such weaknesses may find it difficult to face international competition, which in turn may have negative social consequences.

One of the main questions proposed by years have been, how small and medium firms that belong to Latin-American regions can realize and achieve their goals, in order to, be part of a broader global market environment, reaching a sustainable business growth. The assumption is a bit difficult to achieve, because these firms typically follow a pattern of only produce wages and revenues for survive, instead of, increase productivity, salaries, and profits. This gap between highly competitive patterns and low competitiveness patterns may be caused by a lack of capabilities, or a different way of conception, that firms could have for upgrade themselves. By *"upgrading"* (Humphrey, 2002), literature refers as the ability to produce better products or services more efficiently, developing a set of highly skilled activities. Moreover, it can also be defined as an innovation process necessary to achieve in order to increase value added.[31]

[30] SMEs stands for "Small, Medium Enterprises" that are independent firms which employ fewer than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union. More information about SMEs on https://stats.oecd.org

[31] Humphrey, John., Schmitz, Hubert. (2002). How does insertion in global value chains affect

Even though, most part of the time, SMEs own a lack of capabilities to participate successfully and productively in global markets. However, they could still achieve positive upgrading processes; perhaps this approach would happen thanks to some policies that supports small firms located in clusters and by consequence, these clusters may sustain upgrading efforts.

It can be said that, thanks to empirical evidence established by researchers like Humphrey; Nadvi; and Schmitz; small firms that belong to clusters, situated in developed or developing countries, often are capable to resolve some of the major constraints they usually face, as for example, lack of specific skills, struggle with access to technology, outdated inputs, lack of market crucial information, complicated communications with external services, among others. However, "*the literature on clusters focuses mostly on local sources of competitiveness, from intra-cluster vertical and horizontal relationships that generate collective efficiency; and often neglects the increasing importance of external linkage."* (Schimtz, 2000).

It should be also taken into consideration the literature of "global *values chains"*[32]; considering the extension of information technologies and financial markets, firms and clusters are becoming part of value chains that regularly operates in various countries. It is worth to say that*, "the internal governance of the value chain importantly affects local firms' potential for upgrading"* (Schimtz, 2000)

As we established before, most of the time, many firms located in the Latin-America region are part of clusters as well as value chains, operating simultaneously at local and at global level. Both methods permit that firms can be capable of achieve opportunities and reach high competitiveness levels by learning from large firms and upgrading its capabilities.

However, these firms also face constraints, as for example, there would exist some limitations on upgrading their capabilities and therefore not be efficient at the value chain level. Consequently, all these issues create an unlike competitiveness within

upgrading in industrial clusters? Institute of Development Studies, University of Sussex, Brighton BN1 9RE, UK.

[32] It refers as value chain analysis as the research of local producers on learning from global buyers about how to improve their production processes, attain consistent and high quality, and increase the speed of response. Humphrey & Schmitz. (2002)

clusters, promoting less developed external economies and lack of joint actions from part of the firms. Even though, the industrial sector's features should play a fundamental role, they directly affect the upgrading scenarios of small, and medium

Most of the people who lives in those areas along with entrepreneurs accuse local governments for the existence of this gap of competitiveness level between developed countries and the Latin-American region. In other cases, there is not only the gap that should be taken into consideration, there exist others issues that need to be resolved as the following: *"cultural isolation of companies; total misalignment of the public policies and industrial strategies; poor competitiveness and innovation mechanisms of most SMEs; lack of research and development and a poor system of transferring the results to industry; the poor connectivity and e-readiness infrastructures; the insufficient technical and technological training systems; obsolete regulatory frameworks and biased rules of law"*[33]

As can be seen, Latin-American clusters really need higher levels of synergies, carried out by actors that belong to economic and social structures. All these synergies would establish higher levels of financial instruments and innovation systems, for the support and creation of new venture and entrepreneurship knowledge.

Since the upgrading and value chains thoughts are crucial for the maturation of clusters; it would be importantly to ask how and why the inclusion of global values changes processes does would affect directly or indirectly the upgrading processes on industrial clusters. These assumptions could be answered by taking into consideration some premises, as those that, along these years more and more developing countries participate more frequently in global markets' scenarios.

However, these firms face immeasurable competitive pressure; it is for this reason that manufacturers need to maintain or rise incomes, they do so by increasing their skill capabilities or moving to market niches where could exist less competitive pressure, thanks to special policies or entry barriers, that permit that the manufacturers can

[33] Rabellotti, Roberta. Pietrobelli, Carlo. (2006) "Upgrading to Compete: Global Value Chains, Clusters, and SMEs in Latin America"

have a certain level of competitiveness. All these features are established by the upgrading process.

Clusters and value chains emphasize the importance of this thought, for increase competitiveness in global markets. Also, it is important to point out and determine the role of governance, that refers as the coordination of economic activities through non-market's features involvement; this characteristic is very relevant for the creation, and distribution of knowledge destinated to be transformed in innovation. Nevertheless, clusters and value chains do not see governance at the same point of view, these differences could be determined in (Table 1).

	Clusters	Value Chains
Governance within the locality	Strong local governance characterised by close inter-firm co-operation and active private and public institutions.	Not discussed. Local inter-firm co-operation and government policy largely ignored.
Relations with the external world	External relations not theorised, or assumed to be based on arm's length market transactions.	Strong governance within the chain. International trade increasingly managed through inter-firm networks.
Upgrading	Emphasis on incremental upgrading (learning by doing) and the spread of innovations through interactions within the cluster. For major upgrading initiatives, local innovation centres play an important role.	Incremental upgrading made possible through learning by doing and the allocation of new tasks by the chain's lead firm. Discontinuous upgrading made possible by 'organisational succession' allowing entry into more complex value chains.
Key competitive challenge	Promoting collective efficiency through interactions within the cluster.	Gaining access to chains and developing linkages with major customers.

Table 1: Governance and upgrading: clusters vs. value chains[34]

So, according with (Table 1) it is important to consider the importance of governance at local level, and the position of incremental upgrading by the interaction between firms and local organizations, given that, the resources for create the upgrading condition comes from the local environment. On the other hand, firms that exist in the external world belong to a market that is characterized by the presence of competitive challenges; these challenges can be defeated with the improvement and efforts that the clusters have achieved. Moreover, value chains concern about the production

[34] Humphrey, John. Schmitz, Hubert. (2002). "How does insertion in global value chains affect upgrading in industrial clusters?", Institute of Development Studies, University of Sussex, Brighton BN1 9RE, UK.

allocation system that usually are geographically dispersed. Therefore, the processes of acquiring new functions which generates higher incomes is potentially a critical part of an upgrading strategy.

Taking into consideration the external powers that affects upgrading within clusters, they can influence the way in how the value chain is organized, and which type of upgrading can be considered. It can be considered four types of upgrading: *process upgrading*, which transforms inputs in outputs in a better efficient way by re-organizing all the production system or introducing an enhanced technology; *product upgrading*, which makes that the product could belong to more sophisticated product lines; *functional upgrading*, which focus in acquire new function or change the existing for increase the skill set of activities; and the *inter-sectoral upgrading*, which makes that firms or clusters can transfer their knowledge into new product activities.

It important to have the knowledge of which are the relationships that value chains and upgrading share with clusters. In the case of value chains, four types of relationships can be distinguished as follows: *arm's length market relation*, in which buyers and suppliers do not establish a close alliance, it means that the buyer's requirements can also be also brought by a range of firms, the products becomes standards and easily to customized, without having any kind of exclusive certification; *networks*, in which firms cooperate in a more exclusive and intensive relationship, normally dividing fundamental value chain skills between them, as contrary to arm's length market relation, the buyer in this case may be confidence that the supplier can perform all the asked by him; *quasi hierarchy*, in which a firm applies a high degree of control over other firms within the value chain, this kind of parent firms has to specify the product's characteristics, process that needs to be followed, among other characteristics.

Now that it is known which are the relationships that each pattern follows with clusters, it can be indicate that upgrading expectations of clusters vary according to the type of value chain they sustain. Furthermore, different types of chain governance possess different upgrading assumptions.

It can be settled that local upgrading opportunities vary with the way in which they are governed; it is extremely important to know the differences between which are the different forms of upgrading, and value chains. Furthermore, we need to understand why some firms prefer to govern the chain, even though, this practice requires significant investments. One of the main reasons why these may happen is that developing-country manufactures may find a way for locate themselves in a powerful situation, when they export to develop-countries markets; making possible that their value chains can be characterized for being a quasi-hierarchy relationship. This type of relationship stimulates fast upgrading for local manufacturer within the production atmosphere. However, when this relationship is presented, firms situate in a difficult position for move themselves into higher values activities.

It can also be recognized that there exists a sort of fragility within the global chain governance position that global buyers have. It could be possible that local producers may take advantage of this situation, transforming it in opportunities for them. Nevertheless, it may require gross investment decision by local firms; establishing a pattern in which greater is the opportunity received, greater should be the investments for local innovation along with the support of private and public organizations.

It would be important that, first to introduce the evaluation of how the industrial clusters' environment in LA regarding competitive advantages is, it would be interesting to comprehend how world-class industrial clusters compete and increase their core competences. Consequently, they determine which are the rules for create competitive advantages through industrial clusters.

In the case of developed countries, industrial organizations are formed by highly cooperative and complex groups of clusters which, at the same time, are established by firms and their related industries. In this way, players can maximize their benefits, share knowledge with others, and be part of an environment that stimulate efficient networks, and produce profits that are distributed by all stakeholders through dynamic and sustainable processes. Moreover, these world-class successful clusters are characterized by the use of drivers, as for example, *the capacity of association*; *political positive involvement*; *effective networking*; *valuable value creation*; *high trust extent*

between all stakeholder; *technical focus* and *long-term development of knowledge and skills* focused on a specific product.[35]

The following (Table 2) shows the main features, and key outcomes that successfully developed countries utilize in their highly structured environments, for produce world-class regional competitive forces.

MAIN FEATURES	KEY OUTCOMES
• Reliable national system of innovation. • Trust and confidence in basic institutions. • Transparent, timely, and effective legal frameworks. • Enterprise, government and intra-industry alliances. • Higher education research centers linked to industry needs and government programs. • Wide-area connectivity capabilities. • Modern e-business, e-industry, and e-readiness regional models. • Effective and aligned public policies. • Steady financial and social capital markets, venture capital instruments. • Transparent and coordinated public administration mechanisms at the three levels of government. • Available human capital that is trained and educated in the specialized fields of knowledge that the cluster requires.	• **Sustainable poles of competitiveness.** • **Specialization** on high value increasing returns • Wide coverage of markets of highly skilled **talents** (quantity and quality) • New **venture capital** strategies to support high-risk investments • Highly supportive and world-class **infrastructures** • Flexible and vibrant industries with continuous mobility and **global resource allocation management**. • **Global Producer Networks** (GPN) of highly productive companies. • Empowered and sustainable system of **capitals** (economic, social, environmental and public) • Strong **network economies.**

Table 2: Main features and key outcomes of world-class regional competitive leverages[36]

Furthermore, having all these features available, it can also be determined the existence of Regional Innovation Systems (RIS), which have as main focus to drive and grant all actors toward a joint and powerful vision, settling local clusters into world-

[35] Hill, Edward W. Brennan, John F. (2000). "A Methodology for Identifying the Drivers of Industrial Clusters: The Foundation of Regional Competitive Advantage". Economic Development Quarterly 2000; 14; 65. Published by Sage Publications. More information on http://www.sagepublications.com

[36] Sheel, Carlos., Pineda, Leonardo. (2011) Building Industrial Clusters in Latin America Paddling Upstream. International Journal of Sociotechnology and Knowledge Development.

class value systems, generating highly added values and establishing differentiation level for all participants.

Now that we have seen which are the conditions that successfully industrialized countries have, an important question would be, which conditions are required to develop, as in successfully industrialized countries, '*poles of competitiveness*'[37] in the Latin-American region. It can be argued that one of the basic empowering conditions to turn into an attractor pole should be to have an encouraging collaborative environment, capable to coordinate all the necessary and adequate players needed to have a strongly competitive region. Within these assumptions lie the challenges of converting the business culture dispute issues into collaborative meetings.

In order to raise an industrial competitiveness in a determined region, it does not enough only to be open to trade with global markets; be able to attract foreign direct investments (FDI)[38]; improve technological connectivity; create primary services; or popularize the area with low-tax policies for attract new investors. It is needed more improvements for being regionally competitive. For construct competitiveness, it should be also needed a list of unique, distinguishing, and sustainable capabilities for create qualified clustering conditions that can bring to firms' high levels of competitiveness. There exist innovative regions as those in Europe, US, Japan, that have been able of create great capabilities, exploiting all the resources in possession and creating the best regional advantages possible. Moreover, they were capable to generate high and differentiated value added, providing a competitiveness hierarchy level tor their firms.

[37] Pole of Competitiveness brings together large and small businesses, research laboratories and training establishments within a well identified territory and on a given theme. Its purpose is to support innovation, to encourage the development of particularly innovative collaborative Research and Development(R&D) projects. More information on https://www.poleaquimer.com

[38] Foreign Direct Investment (FDI) flows record the value of cross-border transactions related to direct investment during a given period of time, usually a quarter or a year. Financial flows consist of equity transactions, reinvestment of earnings, and intercompany debt transactions. More information on https://data.oecd.org

Clusters that belong to developed regions have formed strong synergies for all participants among their environments. Also, complementary and supporting activities along with innovative processes have played fundamental roles. In consequences, most of the firms have learned how to deal with micro-and-macro economic cycles, obtaining always high levels of competitiveness. It is worth to say that, these firms belong to cluster-ready regions established in developed countries which have tailored

- Trust and confidence in basic institutions (privacy, physical security, legal security, political continuity)
- Transparent, timely, and effective legal frameworks
- Enterprise, government, intra-industry alliances, and strong social and cultural collaboration schemes
- Higher education research centers
- Strong and wide-area connectivity capabilities, high-quality linkages and viable access (e-readiness)
- Modern business, industry, and regional models (i.e. e-regions, e-business models)
- Wide and effective use of enabling technology resources (i.e. enabling ICT infrastructures)
- Industry producers of high value and differentiation
- Effective and aligned industrial public policies
- Steady financial and social capital markets, as well as robust venture capital instruments
- Transparent and coordinated public administration mechanisms at the three levels of government (i.e. aligned e-governments at national-state-municipal levels)
- Available human capital that is trained and educated in the specialized fields of knowledge that the cluster requires, with the support of educational institutions, research and transfer centers, to further develop

characteristics as those mentioned in (Box 2).

Box 2: Characteristics of strong business environments

All these mentioned characteristics would be able to generate world-class advantages as those mentioned in (Box 3).

- Strong clusters (with world-class practices) competing for high-value global markets.
- Delivery of products to markets without restrictions (space and time)
- Wide coverage of markets of highly skilled talents (quantity and quality)
- New venture capital strategies to support high-risk investments
- Highly supportive and world-class infrastructures (public, physical, etc.)
- Flexible and vibrant industries with continuous mobility and global resource allocation (wherever the best practices are located)
- Global Producer Networks2 (GPN) of highly productive companies.
- Empowered environments capable of transforming innovation, research and development into strong and sustainable systems of capitals (economic, social, environmental and public)

Box 3: Regional competitive leverages

It can also be taken into consideration some hallmarks for preserving fruitfully clusters, as those mentioned in (Box 4).

- Substantial markets conditions, necessary to induce cluster integration.
- Structural drivers (connectivity and technology infrastructure), for clustering stakeholders' hard infrastructure: IT and connectivity, airports and other transportation facilities
- Economic and financial enablers that supports world-class trade. Existence of robust extended value systems of suppliers, customers, and wealth producers.
- Public policy and legal enablers for effective clustering.
- Social and cultural environment that leverage the clustering process.
- Regional attractiveness enablers.
- Industrial competitiveness enablers.
- Entrepreneurial productivity and business environments enablers.

Box 4: Characteristics for preserving successfully clusters

All these assumptions lead us to the conclusion that realize a tailored improvement of the social and economic actors of the productivity sector is a must-conditions for become the principle competitive players at the international market.

All these characteristics push to the conclusion that the improvement of the economic, and social actors of productive sectors, is a required situation for being competitive in global markets. Moreover, developed countries have proved that for maintain competitive firms; industries; and regions, it is required the development of a dynamic progression of collaborations, alliances, and flexibilities from the most effective resources. Furthermore, they focus in positioning the region and their clusters in a sort of world-class region environment; creating powerful *"cluster-readiness conditions"*[39].

So, taking into consideration all the features and performances of the world-class players, a plausible question should be, which are the barriers to cluster-readiness for the LA region. In order to answer these assumptions, we need to take into consideration how is the panorama. However, once that it has been taken into consideration all the features and performances of the world-class players, and since the Latin-American region does not own these performances, it is extremely necessary to ask, which are the barriers to cluster-readiness for the LA region.

The barriers that the LA region faces are many, they begin at the low level of business culture and expand through all the region's industrial structure. Additionally, a required condition to start a cluster is the presence of strong and sustainable industry characterized by the presence of a well-structured value chain of suppliers. There exist some features that can be found in the region, that may constrain the process of clustering for firms as the followings: generalized distrust; low-value creation; low levels of technical skills; inefficient set of rules or political frameworks; low capacity of approach in all levels; low level of industrial policies; low levels of investments by stakeholders; weak infrastructures; low level of compatibility in rules and decision-making approach; among others. Besides, it is presented one of the most important

[39] Cluster readiness is the degree to which a community and its industrial sector are prepared to participate in world-class competitive arenas and to perform as an industrial cluster. Definition took it from the paper: "Transforming an Industrial District into a High-Tech Cluster"

barriers at firm level that is the lack of designing for cluster readiness; having a structure totally different according with those that retain readiness environments.

It can be possible to introduce a strategy for adapt a region that needs to develop industrial clusters. The strategy should focus on a set of features described as follows: *infrastructure capital; human capital*; *knowledge capital*; *relational capital; financial capital*; and *operational capital*.

Infrastructure capital: this feature is related to sustain the infrastructure and the development of clusters within the region. It tries to fix and meet the main elements that will support the progress of clusters. As for example, physical infrastructures (where the products and services will be produced within the cluster) and the indirect elements that can sustain these developments. Besides, it focusses on developing the necessity of see the long-term development of the region and the subsidies needed, at least for an initial time.

Human capital: this feature is related with the available quantity of skilled people that a region may have; the feature should focus on granting the development of fundamental values and skill sets for the people that belong to the cluster.

Knowledge capital: this feature is characterized by the dealing with strategies for generate knowledge. Then, this knowledge will be part of regional development for the creation of new products or services.

Relational capital: this feature can be use along many dealings within the cluster, for example, it can be used in business-union and management-employee dealings. Also, it can be managed by different aspects and points of view, depending on for whom they are intended for.

Financial capital: it can be considered as the most important feature, a key component for develop successfully clusters. It is not only important to consider available financial resources in the short-term period, but also at the long-term period.

Operational capital: this feature can be identified as an assemblage of the best performance that a firm may need. Moreover, it incorporates also the integration of

the best practices of a specific business, becoming a key strategy set when rising and integrating clusters.

2.2. Outline of the principle Latin-America countries that cooperate with the EU and its clusters

By first it will be taken into consideration *Brazil*; it is the largest country in Latin-America and the second largest of the western hemisphere; with 8.5 million km^2 and around 208 million inhabitants; its capital is Brasilia; the Gross Domestic Product (GDP)[40] counts about $3.101 trillion; this country, as local currency, has the Real (R$)(BRL). For several years, its economy was considered one of the quickest growing in the region. Moreover, it is the most significant trading partner of EU from the Latin-American region.

Over the past ten years, Brazil's cluster community has been growing at a constant rate. Also, there exist a certain number of governmental programs designed exclusively for develop them further. There exist key organizations and networks that works along with EU, as for example: the *Ministério do Desenvolvimento*, *Indústria e Comércio Exterior; Low Carbon Business Action Brazil*; *APL Brazil-portal (Cluster);* that works continuously for maintain this constant rate.

The APL observatory is the official database of the Brazilian's clusters, it aggregates and broadcasts information about cluster communities, as for example, environment; geography; sectors, and main cluster cities; etc. According with data analysis, the number of clusters presented in the country has been growing at a fast rate over the past 15 years. Moreover, it currently exists about 447 clusters in the country and about one fifth of them, are concentrated at southern and southeast part of the country.

According with the European Cluster Collaboration Platform, it mentions that: *"in 2011, the Ministério do Desenvolvimento, Indústria e Comércio Exterior of Brazil signed*

[40] GDP is defined as the total market value of all final goods and services produced within a country in a given period. It includes private and public consumption, private and public investment, and exports less imports. More information about GDP on https://www.focus-economics.com

a Memorandum of Understanding (MoU) with the European Commission. Building on this MoU, the GTP-APL signed a Clusters Cooperation Agenda (CCA) with the European ECCP in 2011. In December 2013, a new CCA was signed between GTP-APL and the ECCP."[41]

There exist a high amount of cluster-cooperation opportunities and pursuits from European clusters with Brazilian clusters and SMEs. Besides, the EU has always focus on support any kind of cluster internationalization initiative and cooperation with Brazil. Industrial sectors as biotechnology; renewable energy; and information and communication technology (ICT) represent those activities with the higher opportunities of cooperation with EU clusters, creating innovation and business relationships. A map of the principle Brazilian cluster can be appreciated in (Figure 4)

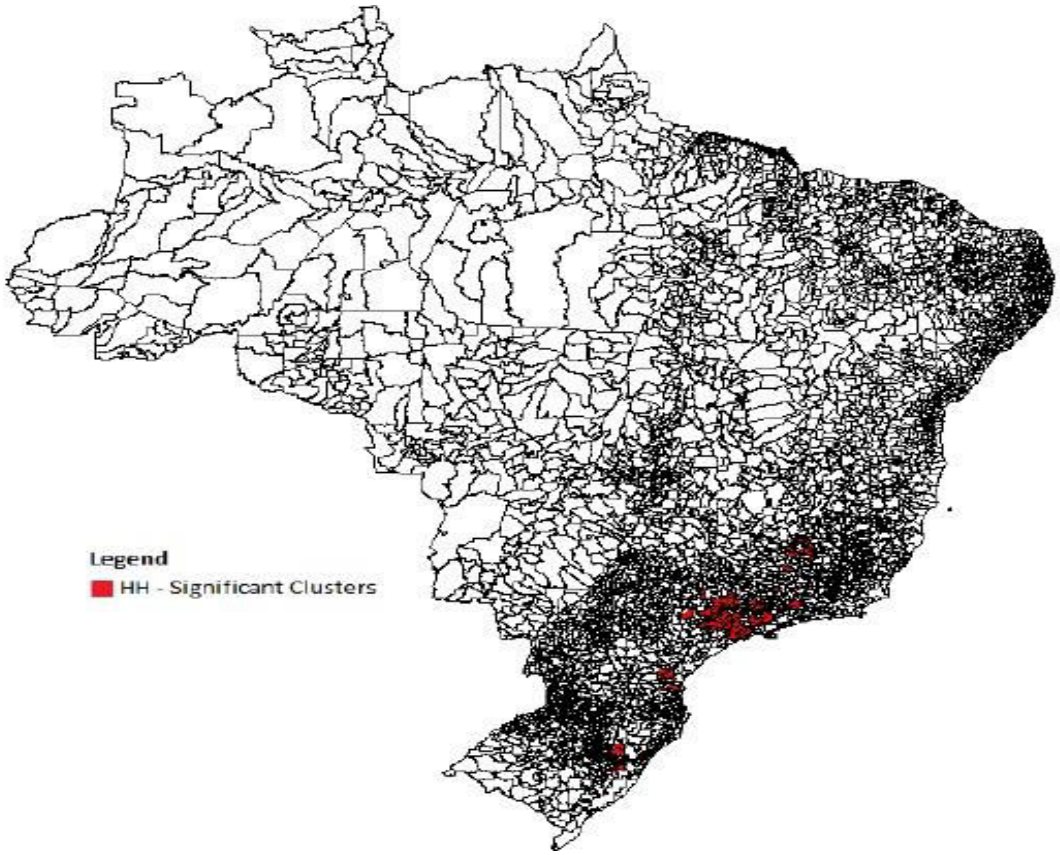

Figure 4: Map of the most representative clusters presented in Brazil[42]

[41] Data took it from: https://www.clustercollaboration.eu/international-cooperation/brazil

[42] Pires, Jose Claudio. Cravo, Tulio. Lodat, Simon. Piza, Caio. (2013) "Industrial Clusters and Economic Performance in Brazil", Inter-American Development Bank, Office of Evaluation and Oversight.

The second country that it will be taken into consideration is *Colombia*. It is a Latin-American country with a dynamic and open economy that has been ranked as an "*middle upper income*"[43] by the World Bank, it registers a Gross Domestic Product (GDP) of 292 billion USD with an increasing growth rate of 3% since 2015. It has a population of about 48'228.704 inhabitants in a total area of 1'141.749 km²; its capital is Bogotá and its currency are the Colombian pesos (COP).

The major industries found in the country includes clothing and footwear industries; textile industry; food processing and beverage industries; oil and mining industries; among others. Colombia has a valuable cluster community with at least 80 clusters registered in the *Colombia Cluster Network (Red Cluster Colombian)*[44], which include more than 21.000 companies; these clusters are mainly focused in the agriculture and agroindustry; energy; manufacturing; health; ICT; and tourism sector. The greater part these clusters carry on, are on R&D and innovation actions, and some of them are pursuit at an international level. Theses internationalization commitments can be done thanks to the trade agreement achieved with EU in 2013.

According with the European Cluster Collaboration Platform, it mentions that: *"PROColombia oversees the promotion of non-traditional exports, international tourism and foreign investment; and fosters investment in agribusiness (biofuels, aquaculture, etc.), manufacturing (automotive, cosmetics, building, fashion, etc.) and services (software and IT, outsourcing, tourism, etc.)"*[45]

[43] According to the World Bank, middle-income countries (MICs) are defined as lower-middle-income economies with a GNI per capita between $1,006 and $3,955 and upper-middle-income economies with a GNI per capita between $3,956 and $12,235. MICs are one of the income categories that the World Bank uses to classify economies for operational and analytical purposes. More information about (MICs) on https://www.investopedia.com

[44] Red Cluster Colombia's website https://redclustercolombia.com/

[45] Data took it from: https://www.clustercollaboration.eu/international-cooperation/colombia

There exist key organizations and networks that works together with the EU, as for example, R*ed Cluster Colombia; INNpulsa Colombia*; *PROColombia*; *Latin-America IPR SME Helpdesk; Eurocámaras*; among others.

It is important to take into consideration the work that is computing the governmental institution *INNpulsa Colombia*[46], which has introduced programs as, for example, the *Prógrama de Rutas Competitivas* (Competitive Routes in English), which its principal aim, since 2012, is to encourage the creation of clusters or , at least, cluster initiatives at national or regional level; the initiative is supported by the *Colombia Cluster Network*.

Moreover, Colombia is a special target for several "*ESCP-4i*"[47] projects for industries like water and energy; natural resources; environment; transport; sustainable construction; among others. A map of the principle Brazilian cluster can be appreciated in (Figure 5)

[46] INNpulsa Colmbia is a development and innovation unit under the legal vision of the Colombian Ministry of Trade, Industry, and Tourism for the development of entrepreneurship in the Colombian territory. More information about INNpulsa Colombia on https://innpulsacolombia.com

[47] The European Strategic Cluster Partnerships for Going International (ESCP-4i) aim to develop and implement joint internationalisation strategies to support SME internationalisation towards third countries. More information about (ESCP-4i) on https://www.clustercollaboration.eu/eu-cluster-partnerships/escp-4i

Figure 5: Map of the most representative clusters presented in Colombia[48]

The third country that it will be taken into consideration is *The United States of Mexico*, commonly called as *Mexico*, is the second largest economy in Latin-America. It has a population of over 129 million inhabitants, covering almost 2'000.000 km^2; its capital is Mexico City and its currency are the pesos (MXN); it registers a Gross Domestic Product (GDP) of about 2.224 trillion USD. According with the Global Competitive Index's ranking, it is situated at the 57th position of 140 countries; established in the third position as Latin-American country participant. However, Mexico's GDP growth rate has demonstrated several fluctuations in recent years.

Mexico is considered as a country which is well established in the services' market, since 59% of GDP is made in the *'tertiary sector'*. Moreover, it has a well-established agglomeration of clusters, where several industrial sectors are promoted. They represent a strong market potential, since there exist around 155 clusters that perform their capabilities in 9 sectors through the country. The clusters are mostly concentrated near to the frontier with US, they operate in the automotive sector;

[48] https://redclustercolombia.com/index.php/clusters-en-colombia/mapa-de-clusters

aerospace sector; renewable energy sector; biotechnology sector; ICT industry; among others.

There exist key organizations and networks that works together with EU, as for example, ProMexico; Low Carbon Business Mexico; among others.

According with the European Cluster Collaboration Platform, it mentions that: *"in 2012, ProMexico signed a MoU (Memorandum of Understanding) with the ECCP aiming to develop synergies and relationships between clusters and SMEs in Europe and Mexico. Strong areas of focus for cluster to cluster cooperation have been identified predominantly in the areas of renewable energies, advanced engineering (manufacturing technologies, automotive and aerospace components or specialised alloys) and biotechnology."*[49]*.The maps of the principle Mexican clusters divided by industrial sectors can be appreciated in the various (Figure 6); (Figure 7); (Figure 8).*

Figure 6: Map of the main automotive clusters in Mexico (by state)[50]

[49] Data took it from: https://www.clustercollaboration.eu/international-cooperation/mexico
[50] Image took it from http://www.promexico.gob.mx/

Figure 7: Map of the main aerospace clusters in Mexico (by state) [51]

Figure 8: Mao of the principal wind clusters in Mexico (by state)[52]

[51] Image took it from http://www.promexico.gob.mx/
[52] Image took it from http://www.promexico.gob.mx/

2.3. Latin-American regional and economic blocs

2.3.1 Brief overview of the MERCOSUR bloc

The 'Mercado Común del Sur' best known as MERCOSUR (Southern Common Market in English) is a regional economic bloc with open and dynamic processes, characterized for focus on the integration and promotion of common spaces, in which can be possible the generation of business and investment opportunities through competitive integration procedures of national economies into international markets. It was initially established by Argentina, Brazil, Paraguay, and Uruguay becoming on the funding-states parties thanks to the sign of the *"Tratado de Asunción"*[53]. Later, Venezuela and Bolivia joined the economic bloc, it is important to denote that Bolivia is still in the submitting phase of its admission procedure. The official working-languages are Spanish and Portuguese. Besides, the official-version documents presented in each meeting will always be translated in the host country's official language. In the following (Figure 9) can be appreciated which are the founding countries (denoted in blue) and which are the associated countries (denoted in green).

[53] The Treaty of Asunción was a treaty between the countries of Argentina, Brazil, Paraguay, and Uruguay signed on March 26, 1991. The objective of the treaty, signed in Asunción, was to establish a common market among the participating countries, popularly called Mercosur (Southern Common Market). More information about the Treaty of Asunción on https://www.mercosur.int

Figure 9: Representation of the founding and associated MERCOSUR's member states[54]

The MERCOSUR bloc extends over 14'869.775 km^2, linking many countries and their territories. Since, it makes that diverse ecosystems coexist, it embodies one of the largest biodiversity reserves in the world, owning a high amount of renewable and non-renewable resources. It has a population density of about 295'0007.000 inhabitants that combine different costumes and cultures. Moreover, the bloc has signed multiple agreements with many countries, in some cases, these countries have received the status of *associated states*. In the case that a state receives this status, it can participate in the activities and discussions designed by the bloc; the associated

[54] Image took it from https://www.mercosur.int/en/about-mercosur/mercosur-in-brief/

states can communicate their trade preferences with the other member states and enjoy of others exclusive characteristics. Additionally, the bloc has signed commercial; political; and cooperative agreements with many nations, institutions, organizations all around the world; transforming itself in the fifth largest economy worldwide.

Since MERCOSUR was created, it has been loyal to its principles, i.e. always considering the improvement of the regional economic development in a democratic environment. Along the years, it has also faced with other issues but always reaching a good result for its agreements, taking into consideration aspects as migration, cultural, and social disputes. These agreements represent solutions needed for a better social and productive integration; they are necessary for adapt and expand the bloc's structure along the region. Furthermore, it is represented by three executive bodies: the *Council of the Common Market (CMC)* which is the main body and it drives the integration processes politically; the *Common Market Group (GMC)* which overlook the bloc's functions; and the last one, the *Mercosur Trade Commission (CCM)* which is the main body responsible for the administration of common commercial policy instruments.

Taking into consideration the EU-Mercosur negotiations for a Trade Agreement. It can be noted that the parties have been recently realized a deal, valid only for the founding member states i.e. Argentina, Brazil, Paraguay, Uruguay. Furthermore, single member states can benefit of bilateral framework agreements, which include trade-relation directly with the EU.

Within the Trade Agreement negotiation, it was specified the resoluteness and improvement of some common issues between the two parties. These features could be agreements considering, as for example, *tariffs*; *rules of origin*; *technical barriers to trade*; *services*; *governmental procedures*; *intellectual property*; *sustainable development*; among others.

Moreover, in the following (Box 5), the European Commission establishes some of the most important features of the MERCOSUR-EU Trade Agreement.

- The EU is Mercosur's number one trade and investment partner.
- The EU is Mercosur's second biggest trade in goods partner, accounting for 20.1% of the bloc's total trade in 2018.
- The EU's exports to the four Mercosur countries totalled €45 billion in 2018. Mercosur's exports to the EU were €42.6 billion in 2018.
- Mercosur's biggest exports to the EU in 2018 were agricultural products, such as foodstuffs, beverages and tobacco (20.5%), vegetable products including soya and coffee (16.3%) and meats and other animal products (6.1%).
- The EU's exports to Mercosur include machinery (28.6%), transport equipment (13.3% of total exports), chemicals and pharmaceutical products (23.6%).
- The EU exported €23 billion of services to Mercosur while Mercosur exported € 11 billion of services to the EU in 2017.
- The EU is the biggest foreign investor in the region, with an accumulated stock of investment that has gone up from €130 billion in 2000 to €381 billion in 2017.
- Mercosur is a major investor in the EU, with stocks of €52 billion in 2017.

Box 5: Most important features EU-MERCOSUR Trade Agreement[55]

Additionally, in the followings (Figure 10) and (Table 3) can be denoted an overview of how is going the trade environment between the EU and MERCOSUR, taking into consideration the years 2016;2017; and 2018.

[55] EU-MERCOSUR Trade Agreement characteristics can be found on https://ec.europa.eu

Figure 10: Histogram overview of the goods traded (in € billions) by EU-MERCOSUR for the years 2016, 2017, 2018[56]

EU-Mercosur: Trade in goods

Trade in goods 2016-2018, € billions

Year	EU imports	EU exports	Balance
2016	40.6	41.7	1.0
2017	42.0	44.3	2.3
2018	42.6	45.0	2.4

Table 3: Overview of the goods traded (in € billions) by EU-MERCOSUR for the years 2016, 2017, 2018[57]

2.3.2 Brief overview of the CAN Community

[56] Data available on https://ec.europa.eu/trade/policy/countries-and-regions/regions/mercosur/

[57] Data available on https://ec.europa.eu/trade/policy/countries-and-regions/regions/mercosur/

The Comunidad Andina de Naciones (CAN) or (Andean Community in English) is a trade bloc or community, created in 1969 within the meeting for the elaboration of the Cartagena Agreement. One of its main objectives is the allocation of a free and unified trade space characterized by the involvement of a unified Andean economic and technological culture, that can ensure improvements on the living standards of the bloc's population. Moreover, it focusses on enhancement of integrated, egalitarian, and economical advances for the region. The Currently countries that make part of the bloc are: its founding member states i.e. Bolivia, Colombia, Ecuador, and Peru; its associated member states i.e. Argentina, Brazil, Paraguay, Uruguay, and Chile; and one observe member state i.e. Spain. In the case of Venezuela, it announced its withdrawal in 2006. The CAN bloc extends over 4'700.000 km^2, it has a population of about 98 million inhabitants and its Gross Domestic Product (GDP) accounts $902.86 billion (US dollar).

In the following (Figure 11) can be appreciated which are the founding countries of the Andean Community.

Figure 11: Andean Community's founding member states[58]

The main benefits of the treaty between EU-CAN included open markets guaranteed for both goods and services, better conditions of trade policies, a more stable competitive environment, cooperation and mediation trade deals and a new trade and sustainable development policy.

In its "Regional Strategy Paper 2007-2013"[59], the EU assigned €50 million for the CAN bloc. For enhance three sector that were important to improve as the following: *Social Cohesion*, *Regional Economic Integration* and *Fight Against Illicit Drugs*.

[58] Figure available on https://www.gifex.com/detail-en/2010-01-13-11726/The_Andean_Community_of_Nations.html

[59] More information about Regional Strategy Paper 2007-2013 on https://ec.europa.eu/europeaid/sites/devco/files/rsp-andean-community-2007-2013_en.pdf

Moreover, in the following (Box 6)[60] , the European Commission establishes some of the most important features of the EU-CAN Trade Agreement.

• The EU is the third-largest trade partner and a major investor in the Andean countries. In 2017, total trade of the EU with the Andean countries was worth around €25.7 billion.

• The Andean countries export agricultural products (47%) and fuels and mining products (38,1%) to the EU

• The EU exports manufactured goods, notably machinery and transport equipment (41.8%) and chemical products (22.1%) to the Andean countries

Box 6: Main features of the EU-CAN Trade Agreement

Furthermore, in the followings (Figure 12) and (Table 3) can be denoted an overview of how is going the trade environment between the EU and MERCOSUR, taking into consideration the years 2016;2017; and 2018.

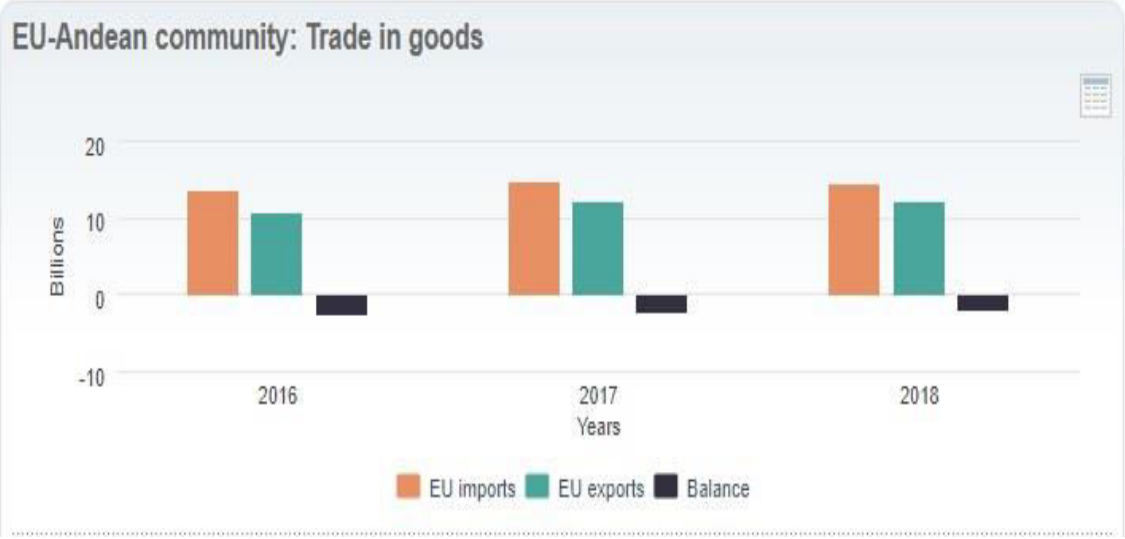

Figure 12: Histogram overview of the goods traded (in € billions) by EU-CAN for the years 2016, 2017, 2018

[60] EU-CAN Trade Agreement is available on https://ec.europa.eu

EU-Andean community: Trade in goods

Trade in goods 2016-2018, € billions

Year	EU imports	EU exports	Balance
2016	13.4	10.7	-2.7
2017	14.8	12.2	-2.5
2018	14.3	12.1	-2.2

Table 4: Overview of the goods traded (in € billions) by EU-CAN for the years 2016, 2017, 2018

CHAPTER III: The concept of Smart Specialization Strategies as drivers for the enhancement of Innovation and Technological capabilities in Latin-America.

3.1. Overview of the Smart Specialization approach between Latin-America and EU cooperation

Since the idea of Smart Specialization has been applied in the EU with great successful, it has also been considered by some countries in Latin-America. The consideration about this notion is very important for countries that desire to enhance their innovation abilities at regional level. For this reason, most of the LA countries have decided to bring innovation and specialization to their territories. Moreover, this approach between these regions may bring information with a better understanding of which is the position, in terms of, socio-economic and territorial differences.

The main objective that these countries desire to reach is the transformation of the productivity sector, it would be done by reducing the *technological gap* that exist within the region. Even though, some countries are *one step forward* among others i.e. some countries distribute resources in a better way (within their territories) than others; the application of innovative policies and strategically plans, for some countries, bring a much significant result respect to other countries that try to apply the same methodology. For these reasons, it would be necessary the implementation of a set of strategies that can bring the same, or at least, almost the same performance level for all the countries' region interested. However, all the procedures mentioned before still lack of a deeper analysis that can permit a bigger understanding of the strengths and weaknesses of each territory, which are commonly regulated by local governments.

It should be pointed out, that at the moment of the development of the Regional Innovation Strategies (RIS3), investors and the political sector need to enable cooperation opportunities; an example of these corporations should be: *the projection, execution, and valuation of learning processes that can constantly raise innovative and*

*dynamic experience*s. These learning processes may propose an introduction of added value within the region, giving as result the procurement of an essential position in global value chains.

For these reasons, there exist the possibility to establish a cooperation at a trans continentally level, bringing considerable expert advices and contribution from one region to another. The collaboration between the EU and Latin America would provide a collaborative framework focused on the approach of the various regions that are willing to become specialized, alongside with common and strategically domains. These interests are shown in (Figure 13) (Paton, 2016) in which describe the interests of both parties in terms of territorial growth and innovation

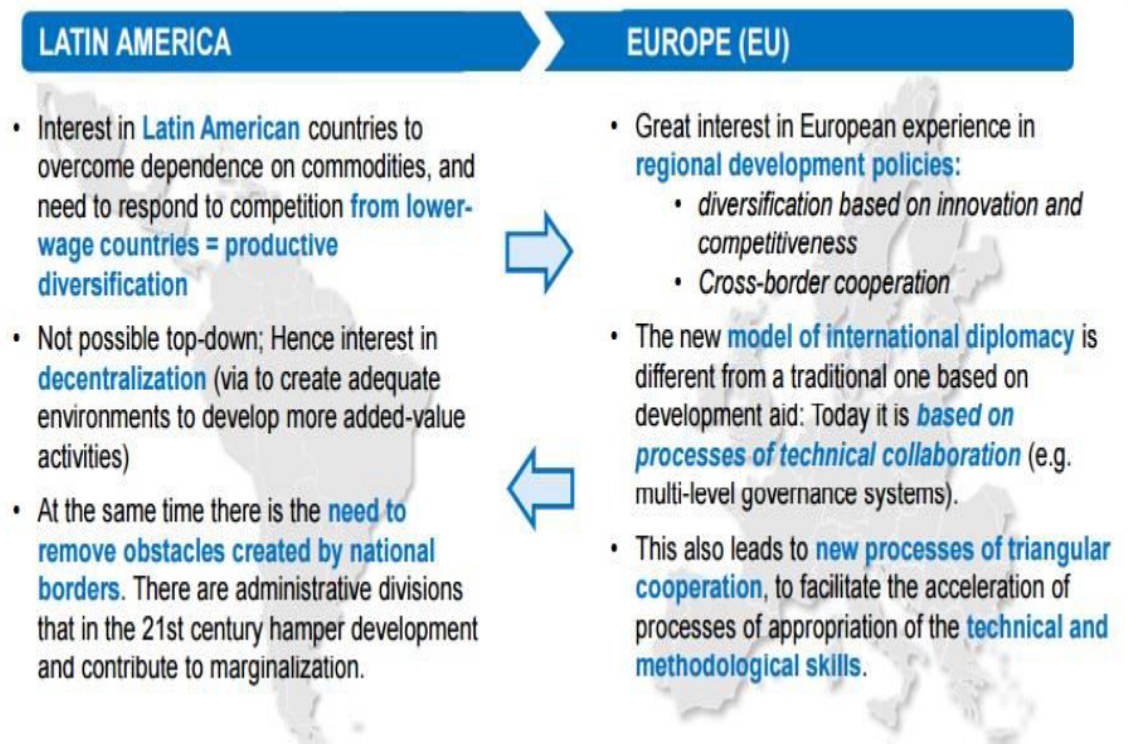

Figure 13: EU-LAC interest on Common territorial development[61]

It is also important to contextualize the EU - CELAC[62] approach. This dialogue represents a gross opportunity for the improvement of a regional approach between the two regions, this

[61] Barroeta, Belen, et al. (2017) "Innovation and Regional Specialization in Latin America". JRC Technical Reports.

mutual interest and the application of a smart specialization can be shown as driving instruments to facilitate synergies between the two regional innovation systems.

3.2. The main features of RIS3 policies for the improvement of the LA region

3.2.1 Overview of the Institutional Frameworks for Innovation and Regional Specialization

It can be stated that "*EU regional policy*"[63] approach has been established as one of the most important cooperation drivers between Europe and Latin-America for the expansion of regional innovation. It is for this reason that, the *"DG REGIO"*[64] has developed procedures of knowledge transferences towards other parts of the world; specially in Latin-America. By the time, there exist "*regional policy dialogues with Brazil (2007), Argentina (2012), Chile (2010), Peru (2013), Mexico (2014), SICA (2015) and Colombia (2015)"*[65].

These regional dialogues are the mean to assist the setting up of regional policies and governance; which aim is to promote cross border and inter-regional cooperation in Latin American countries. They can contain instruments to elaborate and implement the management of urban and regional policies; as shown in the following boxes (Box 7)[66] corresponding to Brazil; (Box 8)[67] corresponding to Chile; (Box 9)[68] corresponding to Mexico:

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[62] The Community of Latin American and Caribbean States (CELAC) was launched in 2011 and represents a regional political coordination mechanism, which gathers all 33 Latin American and Caribbean countries in the region. CELAC is the EU's official counterpart for the region-to-region Summit process and strategic partnership.

[63] EU regional policy is an investment policy. It supports job creation, competitiveness, economic growth, improved quality of life and sustainable development. These investments support the delivery of the Europe 2020 strategy. More information about the EU Regional policy can be found on https://ec.europa.eu/regional_policy/en/

[64] DG REGIO stands for The Commission's Directorate-General for Regional and Urban Policy is responsible for EU policy on regions and cities. More information about DG REGIO on http://ec.europa.eu/regional_policy/en/

[65] https://ec.europa.eu/regional_policy/en/policy/cooperation/international/latin-america/

[66] Citation took it from the EU-CELAC S&T Policy Dialogue. More information about EU-CELAC S&T Policy Dialogue on http://www.alcuenet.eu/policy.php

[67] Citation took it from the EU-CELAC S&T Policy Dialogue. More information about EU-CELAC S&T Policy Dialogue on http://www.alcuenet.eu/policy.php

[68] Citation took it from the EU-CELAC S&T Policy Dialogue. More information about EU-CELAC S&T Policy Dialogue on http://www.alcuenet.eu/policy.php

In the case of Brazil, the dialogue focuses on:

- Policies for territorial cohesion and the decrease of social and regional inequalities;
- Policies that contribute to economic growth, competitiveness and employment;
- Experiences in the formation and application of regional policies and for the organization of territorial development strategies;

Box 7: Main regional policies dialogues between EU and Brazil

In the case of Chile, the dialogue focuses on:

- Multi-level governance/decentralization, driving towards an integrated territorial development approach within the country;
- Cross-border cooperation by taking as example, the EU;

Regional innovation strategies, namely in the framework of the project RED, co-funded by the EU.

Box 8: Main regional policies dialogues between EU and Chile

In the case of Mexico, the dialogue focuses on:

Exchange of information and cooperation according to geographic policies, for the increase of growth, competitiveness, employment and towards a better territorial balance;

To exchange information regarding experiences in the establishment and application of regional and urban policies, including urban, rural and cross-border zones;

To exchange opinions and good practices regarding the organization of forms of multilevel governance and regarding the development of regional strategies.

Box 9: Main regional policies dialogues between EU and Mexico

The ties between RIS3 processes and design of regional innovation systems in Latin-America have brought to the creation on different initiatives:

"The RED project"[69]*, connecting the innovation of Regions*: this project is the result of UE-Chile cooperation with regional innovation systems, which are promoted trough the RED project. Thanks to the DG REGIO and the technical support there have been defined different plans developed between 2011-2013 period in 7 different Regions of Chile. In 2013 there have been included other 4 Regions and after that there have been implemented other technical cooperation and support strategies with visits to Europe.

[69] https://ec.europa.eu/regional_policy/en/policy/cooperation/international/latin-america/chile/

Inter-regional cross-border cooperation: it is based on the *'European Territorial Cooperation experience (Interreg)'*[70], there have been promoted cross-border cooperation activities also throughout third countries, with programs such as *'EU-Latin American Cross-Border Cooperation (CBC)'*[71] and *'EU-Latin America cooperation on Cross-border Regional Innovation Systems'*[72].

Innovation and territorial linkages city-region: 'the International Urban Cooperation (IUC)'[73] project was created in 2016, in order to increase sustainability and innovation in cities and regions. The smart specialization was able to contribute to the cooperation trough three different work packages, which are: inter-cities cooperation in sustainable development, actions at a subnational level within the framework of the Global Covenant of Majors initiative and inter-regional cooperation regarding innovation for local and regional development.

Through these initiatives there were reached different objectives applicable to other forms of collaboration. These projects have demonstrated the importance of the EU-Latin America cooperation, enhancing the shape of the regional and national strategies as well as connecting them within a single process of strategic programming. However, it is also necessary to create new initiatives and programs in order to generate positive effects continuatively.

[70] European Territorial Cooperation (ETC), better known as Interreg, is one of the two goals of cohesion policy and provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different Member States. More information about Interreg on https://ec.europa.eu/regional_policy/en/policy/cooperation/european-territorial/

[71] https://ec.europa.eu/regional_policy/en/policy/cooperation/international/latin-america/eulac-cbc/

[72] http://www.innovactplatform.eu/en/documents?f[0]=tags:9

[73] More information about International Urban Cooperation is available on http://www.iuc.eu

3.3. New opportunities for EU – LA cooperation

3.3.1 Case study: EU – CELAC Trade Agreement

During the last 20 years, the European Union and Latin American relationships have been advanced with the EU-LAC dialogue. In the first years (between 1999 and 2010), there were organized six Summits between Heads of State and Government of the European Union and Latin America and the Caribbean countries. The result was the establishment of cooperation areas including the key subjects highlighted. Some examples are *social cohesion*, *climate change*, *SMEs' promotion* and *expansion of private sector*, *higher education*, investments, among others.

The identification and application of planned action was not enough to make functions the structural changes prescribed, also because of the socio-political context and economic aspects of Latin American countries. It is clear that massive action was needed in order to understand which the most important factor is to start the true transformation.

Another interesting theme is the *EU-CELAC Cooperation Framework*[74], dedicated to the structured dialogue. The true turning point is made evident with the 2010s' EU-LAC Summit, in Madrid. There was introduced the so-called Madrid Action Plan for the years 2010-2012, which identified new management policies aimed at a stronger structural change.

In 2012 the CELAC was formally known as the Latin American counterpart of the European Union for the bi-regional partnership procedures. From this date on, EU-LAC and EU-CELAC summits have been integrated in a single event, with the aim to deliver strategic action plans for the subsequent two years. (Figure 14) shows the progress of these Summits.

[74] More information about EU-CELAC Cooperation Framework on https://eeas.europa.eu/headquarters/headquarters-homepage_en/13042/EU-CELAC%20relations

2010-2012	2013-2015	2015-2017
Science, research, innovation and technology	Science, research, innovation and technology	Science, research, innovation and technology
Sustainable development, environment, climate change, biodiversity and energy	Sustainable development, environment, climate change, biodiversity and energy	Sustainable development, environment, climate change, biodiversity and energy
Regional integration and interconnectivity to promote social inclusion and cohesion.	Regional integration and interconnectivity to promote social inclusion and cohesion.	Regional integration and interconnectivity to promote social inclusion and cohesion.
Migrations	Migration	Migration
Education and employment to promote social inclusion and cohesion.	Education and employment to promote social inclusion and cohesion	Education and employment to promote social inclusion and cohesion
The world drug problem.	The world drug problem	The world drug problem
	Gender	Gender-related issues
	Investments and entrepreneurship for sustainable development	Investments and entrepreneurial spirit for the purposes of sustainable development
		Higher education
		Citizen Security

Figure 14: Action Plans for EU-CELAC Summit[75]

In Brussels in 2015, there was held the second EU-CELAC/EU-LAC summit. The conclusions of the meeting were that there was the need to increment the cooperation through five strategic areas, which regard the improvement in cooperation and in research and innovation; the strengthening of scientific and technological capacities and infrastructures, the empowering of sustainable research, innovation and knowledge, the boosting in the use of new and existing technologies and the promotion of cooperation between regions and the creation of a digital-economy.

These areas are also the integration of the existing Joint Initiative for Research and Innovation (JIRI)[76], presented at the Madrid EU-LAC 2010 Summit. The JIRI mechanism is operating through the Senior Officials Meetings (SOM) with representatives of the EU, Latin America and the Caribbean who conduct the bi-regional dialogue regarding Research and Innovation. There were appointed four working groups dedicated to the

[75]More information about the Action Plans of the EU-CELC Summit https://www.consilium.europa.eu

[76] More information about the EU-CELAC Joint Initiative on Research and Innovation (JIRI) can be found on https://ec.europa.eu

priority areas, which are energy, biodiversity and climate change, information and communications technology (ICT) and bioeconomy.

The EU-CELAC Summit also projected a '*roadmap*'[77], which must be periodically updated, to define specific objectives and conforming result indicators for the application of the Joint Initiative.

That one may take into consideration the cooperation on the Regional Innovation System, it will for sure focus on the internationality of EU regional policy, which are the key cooperation driver between the EU and Latin America for the regional innovation. Thanks to the experience obtained by the evolution of different EU regional innovation programs, the DG REGIO promoted activities of knowledge transfer concerning cross-border territories and countries of other continents, in particular Latin America.

Nowadays, there are regional cluster policy discussions formalized through agreements with the following CELAC countries: *Brazil*, *Chile*, *Colombia*. These dialogues comprise the exchange of knowledges between regional authorities dedicated to the elaboration, implementation and management of urban and regional policies. One of the most important examples can be found on (Box 10) [78]

[77] More information about the EU-CELAC Summit Roadmap on https://www.eucelac-platform.eu/roadmap

[78] https://ec.europa.eu/jrc/sites/jrcsh/files/innovation_and_regional_specialisation_latinoamerica.pdf

The *EU-Latin America cooperation on Cross-border Regional Innovation Systems (Brazil and Peru)* recognized a specialized cluster in aquaculture in the Amazonian border between Colombia, Peru and Brazil.

The *Cross-Border Cluster on Aquaculture* was acknowledged as a good example of specialization because of the participation of non-profit, private and public/private entities.

In general, the economic activity has an enormous potential, this reflects a huge importance of cross border cooperation, which may play a fundamental role, most of all when the experience is sheltered. An important duty can be linking the identified areas of specialization with the current participation of researchers of these countries' regions in the European R&D activities and projects.

Box 10: Specialization in cross-border areas, clusters and multi-governance[79]

The previous experiences offer the outline circumstances for the formation of a new stage in the collaboration between the EU and Latin America in terms of regional innovation and specialization. Cooperation potential and pre-identified roadmaps have been already identified in the framework of regional policy, for this reason, further partnership should be based on previous experiences. The following issues are identified as the main elements of this capitalization:

A collaboration network dedicated to training bases, related to both geographic and sectorial networks. Latin American universities have taken advantage of the opportunities of the European R&D programs, thanks to the UE-Latin America collaboration.

Regarding inter-regional and international interchanges there have been established an identification of regional stakeholders interested in the definition of smart specialization strategies. There have been developed collaborative projects in areas of

[79] http://www.innovactplatform.eu/en/documents/eu-latin-american-cooperation-cross-border-brazil-and-peru-regional-innovation-systems

interest in different Latin American regions, that have enabled actions toward innovative and added value sectorial specialization.

S3 Platform, which represents a potential contribution of the EU to Latin America in some technical fields.

Conclusion

To conclude it can be said that Latin American Countries have had some benefits from the UE collaborations and cooperation. Moreover, it can be stated that the South America is a quite problematic continent, which needs to learn and grow. For sure there have been son development and growth examples, but nevertheless, it is still all in process. The Cluster World have helped the Continent to enhance its general socio-economic situation, creating a sort of “safe place” for the businesses.
The Latin America is a Continent rich of natural resources and it is for sure developing, but it lacks instruments and managements gifts.

An important observation is that there are some differences between European and Latin American innovation models for cluster development, which indicates the need to create policies with a regional differentiation.
Indeed, the smart specialization, along with cluster and cluster policies are for sure, an essential element to motivate an innovation pathway for cluster development in the LA regions.
Considering the Countries examined before, it can be said that:

Chile is progressing towards a decentralization system of innovation policies which is being well perceived from the local clusters.

Brazil is in the progressive way of the horizontal coordination’s development between states and local clusters will allow important synergies in the endeavors in the definition of their specialization strategies.

Colombia may emphasize aspects related to the public resources designated to the innovation programs, which demonstrates a consolidation of governance systems and the definition of the regional specialization priorities.
Mexico may need to increase efforts in the coordination between the national level of the policy definition and their local cluster initiatives.

The cooperation between the European Union and Latin America have risen thanks to regional specialization issues. The dialogue EU–Latin-America is providing more relevance to the role of clusters as enablers for research and innovation policies. Moreover, European institutions have permitted the creation of smart specialization strategies throughout all the LA territory.

To conclude, it can be said that:

There are regions that have shown great interest towards the smart specialization concept and are currently conducting pilot activities aiming at testing the adaptation of this approach according to their own territorial characteristics and socio-economic contexts.

Other regions have motivated political support and are already allocating more resources to regional specialization initiatives.

Bibliography:

Barrotea, Gomez Pietro, Paton, Palanzuelos, “Innovation and Regional Specialisation in Latin America”, JRC Technical Report, 2017.

Duranton, Gilles., Kerr, Willian R. (2015). The Logic of Agglomeration, Harvard Business School.

European Commission, “Cluster programmes in Europe and beyond”, European Observatory for Clusters and Industrial Change, May 2019.

European Commission, “EU-MERCOSUR Trade Agreement”, Trade and Sustainable Development, Factsheet.

Ferreira Portugal, Manuel, et al. (2012). Impact of the Types of Clusters on the Innovation Output and the Appropriation of Rents from Innovation, Journal of Technology Management & Innovation, Volume 7, Issue 4.

Glaeser, Edward L. (2010). Agglomeration Economics, The University of Chicago Press.
Hill, Brennan, “A Methodology for Identifying the Drivers of Industrial Clusters: The Foundation of Regional Competitive Advantage”, Economic Development Quarterly, 2000.

Humphrey John and Schmitz Hubert, “How does insertion in global value chains affect upgrading in industrial clusters?”, Institutes of European Studies, University of Sussex, Brighton.

International Monetary Fund, “Cluster report - trade integration in Latin america and the Caribbean”, Report, 2017.

Ketels, Christian H.M., Memedovic, Olga., (2008). From Clusters to Cluster-based Economic Development. In. J. Technological Learning Innovation and Development, Vol. 1, No.3.

Langlois, R., Robertson, P., (1996). Stop Crying over Spilt Knowledge: A Critical Look at the Theory of Spillovers and Technical Change. University of Connecticut Department of Economics Working Paper Series, Connecticut.

Marshall, A. (1890). The Principles of Economics, Book IV: The Agents of Production: Land, Labour, and Capital and Organization.

Martin, Ron., Sunley, Peter. (2001). Deconstructing Clusters: Chaotic Concept or Policy Panacea, Journal of Economic Geography, University of Cambridge, in collaboration with the University of Edinburgh.

MERCOSUR, “Tratado para la constitucion de un Mercado Comun entre la Republica Argentina, la Republica Federativa del Brasil, la Republica del Paraguay y la Republica Oriental de Uruguay”, Official Document, 26 March 1991, Asuncion.
Pietrobelli, Rabellotti, “Upgrading to Compete, Global Value Chains, Clusters, and SMEs in Latin America”, Inter-American Development Bank, David Rockefeller Center for Latin American Studies, Harvard University.

Porter, M. E. (1998). Systems of Innovation: Growth, Competitiveness and Employment. Harvard Business Press: Boston.

Porter, Michael E. (1990). The Agents of Production: Land, Labour, and Capital and Organization, Harvard Business Review.

Sautet, Frederic. (2015), "Schumpeterian Rents", The Palgrave Encyclopedia of Strategic Management, Palgrave Macmillan.

Scheel, “Why Clusters have not succeeded in Latin America?” How to reverse this trend”, EGADE, Tecnológico de Monterrey, Mexico.

Scheel, Ross, “Strategies for building competitive clusters in Latin America”, EGADE, Tecnológico de Monterrey, Mexico.

Secretary-General of the OECD. (2013). Innovation-driven Growth in Regions: The Role of Smart Specialisation.

Sun, Vorisek, “Latin America and the Caribbean”, Global Economic Perspective, 2017.
Uyarra, Elvira., Ramlogan, Ronnie. (2012). The Effects of Cluster Policy on Innovation. Manchester Institute of Innovation Research, Manchester Business School.