



Universitat de Girona

Facultat de Ciències
Econòmiques i Empresariales

**FINAL DEGREE PROJECT IN BUSINESS ADMINISTRATION AND
MANAGEMENT**

THE EVOLUTION OF CLUSTER CONCEPT IN CATALONIA

The case of Cork Cluster – AECORK

Author: Joyce Serarols Tarrés

Supervisor: Nela Filimon

Year: 2014-2015

*The journey of a thousand miles
starts with a single step.*

PREFACE

First of all, I want to thank my family for giving me the enormous opportunity to study a degree, for allowing me to go abroad and proportionating financial and emotional support. Having the possibility to study abroad for two whole years have made me a different person, more mature and responsible and on the top of it conscious of the importance of having a University degree in order to increase my cultural and personal knowledge.

Second of all, I would like to thank all the professors I have had in both universities: “University of Girona” and “Università Carlo Cattaneo”, which have helped me to develop and criticize my own ideas together with the acquirement of different skills to express myself in a proper way. In addition, they have encouraged me to get wiser in the economical and management areas.

Last but not least, I would also like to thank my friends and classmates by giving me the strength to continue studying and helping during those four years of lectures.

It has been a pleasure to meet them. And above all, I am pleased to have had the possibility to relate with many students who come from different places across the world. In the end I have learnt from them all and gained life experience.

Joyce Serarols Tarrés

TABLE OF CONTENTS

TABLES	5
FIGURES	6
INTRODUCTION	7
1. CLUSTER DEFINITION	8
2. CLUSTER ANALYSIS	10
2.1. THE DIAMOND MODEL	10
2.2. SWOT ANALYSIS	13
3. ORIGINS AND EVOLUTION OF CLUSTERS IN CATALONIA:	
A THREE PHASES PROCESS	14
3.1. CLUSTERS, THE IMPORTANCE OF INNOVATION AND THE GOVERNMENT IMPLICATION	16
3.2. CLUSTERS INITIATIVES	18
3.3. THE CASE OF AECORK, THE CATALAN CORK CLUSTER	19
4. THE SPANISH CORK SECTOR OF PRODUCTION	22
4.1. COMPETITIVE ANALYSIS OF THE SPANISH CORK SECTOR WITH THE SWOT FRAMEWORK	25
4.2. CORK CLUSTER IN CATALONIA	26
4.2.1. CLUSTER MAP	27
4.3. THE COMPETITIVE ADVANTAGES OF CATALONIA	28
4.4. DIAMOND MODEL	30
<i>FACTOR CONDITIONS</i>	30
<i>CONTEXT FOR FIRMS, STRATEGY & RIVALRY</i>	30
<i>DEMAND CONDITIONS</i>	31
<i>RELATED & SUPPORTING INDUSTRIES</i>	31
6. DISCUSSION AND SUGGESTIONS	33
7. LIST OF REFERENCES	35
BOOKS:	35
PAPERS:	35
ARTICLES:	36
LINKS:	36
8. APPENDICES	39

TABLES

Table 1: *Organizational structure of AECORK*

Table 2: *Cork Cluster Aggregated data for 2013*

Table 3: *Associated Companies and Agencies in the Cork Cluster (2013)*

Table 4: *Wood and cork sector in Spain*

Table 5: *SWOT analysis of the Spanish cork sector*

Table 6: *The Catalan Cork Cluster*

Table 7: *Local production systems in Catalonia by sector*

FIGURES

Figure 1: *Determinants of National Competitive Advantage*

Figure 2: *SWOT Analysis explanation*

Figure 3: *Phases of Clusters development in Catalonia*

Figure 4: *Logo of AECORK*

Figure 5: *“Map of the local industrial production systems in Catalonia”*

Figure 6: *“Competitiveness reinforcement initiatives and Cluster positioning in Catalonia (2004-onwards)”*

INTRODUCTION

The aim of this final degree project in Business Administration and Management is two-fold: first, to introduce the evolutionary concept of the cluster in Catalonia from a strategic perspective and, second, to analyse the case of the Catalan Cork cluster located in the province of Girona, that is, the northeast of Spain. The cluster concept has been introduced and analysed by some prominent economists like, for example, Alfred Marshall, Giacomo Becattini and Michael Porter, among others, who have analysed the implications derived from its strategic management for market competitiveness with different economic models (i.e., the Diamond model, etc.). The ongoing globalization of markets has shown that the cluster is becoming every day a more and more important form of strategic partnership for the firms in order to compete nationally and internationally. - *“Think globally, act locally”*-

In addition, my interest for this topic was motivated also by the fact that the cluster concept, is a subject taught in a rather few number of universities around Europe and USA. As a matter of fact, Harvard Business School is one of the few institutions that has managed to put together several researches on this issue elaborated by Porter together with other professors and students from different parts of the world. Thanks to an Erasmus mobility grant I had the chance to attend two courses that talked about clusters and regional competitiveness, and for this reason I’ve decided to focus my Final Degree project on the analysis of a Cluster in Catalonia.

The work is organized in five sections as follows: section 1 is dedicated to the definition of the cluster; section 2 deals with cluster strategic analysis (the SWOT and Diamond frameworks of analysis); section 3 and 4 analyses the evolution of the cluster concept in Spain and Catalonia with special focus on the Catalan cork sector; and in section 5 some conclusions are provided.

1. CLUSTER DEFINITION

Nowadays, citizens all over the world are totally aware of the globalisation process that is being experienced and which is transforming the economy and the way to compete among continents, countries and even regions. The changes in firms' business models are forcing them to introduce new market players to control the way of creating value and the processes used to produce goods or services. Because of these changes it is increasing the relevance of the "immaterial capital" such as the Brand, R&D, know-how together with innovative strategies that are meant to improve the competitiveness of different sectors of production. And one of the ways to achieve entrepreneurial competitiveness is by creating clusters.

A cluster, in business terms, is a geographical area in which there is a high concentration of interconnected businesses, suppliers, and organizations or associated institutions that work in a particular sector of production. The cluster' goal is to increase the productivity of the companies involved in order to compete not only nationally and internationally in a global manner, but also at regional or local-city as a result of improving their competitiveness. Clusters' origin may be related to many factors such as: the existence of local competitiveness in the area, the effort to reinforce the development of particular skills or abilities in a particular territory, the initiatives oriented towards the creation of new companies (start-ups, spin-offs...) or the local demand forecast for a specific type of products or services.

Cluster definition was first introduced in the end of the nineteenth century by Alfred Marshall¹ who was an English economist, followed by an Italian professor whose name is Giacomo Becattini² and finally developed by the American professor at Harvard's University, Michael E. Porter³.

¹ See, for example, his studies on industrial districts in England at the end of the 19th century in his book *Principles of Economics* (1890).

² Becattini has analysed the industrial districts of Terza Italia. Italy in his book, *"Dal 'settore' Industriale al 'distretto' industrial. Alcune considerazioni sull'unità d'indagine dell'economia industriale"* (1979).

³ Porter has published several studies; *"The Competitive Advantages of Nations"* (1990); *"On Competition"* (1998) and *"The Five Competitive Forces that Shape Strategy"* (2008).

How do we identify them?

One of the most common ways to identify clusters could be by doing an analysis based on quantitative methods to spot agglomerations of similar industries in a concrete region. According to some scholars, one important shortcoming of this method is that, sometimes, by doing it in this way, one might avoid fundamental factors such as flows of information or cooperation links, which do not take part in the market in a visible manner.

In which way clusters affect competition?

Existing research evidence (*see the books of the economists mentioned above*), in particular, the book *“On Competition”* by Porter, has shown that Clusters are an interesting issue to study because their presence in a territory may affect competition in several ways.

Clusters affect competition by:

- Increasing productivity and operational efficiency;
- Stimulating and enabling innovations;
- Facilitating commercialization and new business formation;
- Encouraging linkages and spill-overs across firms and associated institutions;
- Overcoming domestic political and associated agencies;
- Increasing operational effectiveness;
- Gaining strategic positioning;
- Having free trade or export processing zones;
- Attracting Foreign Direct Investment, that allows to:
 - Infuse modern ways of managing and competing (like for i.e. applying new methods to change and improve a company’s corporate image, using Brand management, new marketing spots...);
 - Enhance the intensity and sophistications of local competition;
 - Facilitate outward trade and internationalization;
 - Stimulate other clusters’ development;
 - And bringing new skills, capabilities and technologies in the territory.

2. CLUSTER ANALYSIS

According to the existing research evidence (see, i.e, Porter 1990, 1998, 2008), in order to analyse clusters there can be used several economic models, the most applied frameworks of analysis being the ones developed by Porter (1990); the Diamond model, the Five Competitive Forces that Shape Strategy (2008) or the SWOT analysis. In this report we will go through the first and third one.

2.1. THE DIAMOND MODEL

This model attempts to explain why some companies are capable of consistent innovation, pursue improvements, seek a sophisticated source of competitive advantage and are able to overcome the substantial barriers to change and innovation. It explains that every nation possesses four attributes that determine its competitive advantage. These attributes are the following ones (*as shown in Figure 1 below*):

- **Factor Conditions:** the model does not consider only the standard factors of production such as labour, land, natural resources, capital and infrastructure; it goes far beyond by considering other factors. For instance, the ones that are not inherited but represent the most important factors of production, like skilled human resources or a scientific base.

Also the ones that involve sustained and heavy investment and are specialized. In addition, a factor must have a high degree of specialization to cover the particular industry needs.

As a matter of fact, as argued by Porter (1990), selective disadvantages in some areas of production might actually encourage an enterprise to get upgraded and try to innovate and hence, disadvantages can become advantages in some cases.

- **Demand Conditions:** according to this attribute, it is a concern of many firms to identify which are the emerging buyer needs and how demanding buyers try to pressure companies to improve and innovate faster. This way companies achieve more sophisticated competitive advantages with respect to their foreign rivals.

It is therefore important to detect the nature of the domestic buyers, as they are those who provide a window into advanced customer needs; they tend to pressure companies to meet high standards and urge them to improve by upgrading into more developed segments.

Another implication derived from this attribute is also the fact that as needs arise thanks to local values and circumstances, in addition, local buyers can lead to a global market trend depending on their needs (i.e., normally nations export their values and tastes through media, training foreigners, influence with their politics and other foreign activities concerning their citizens).

- **Related and Supporting industries:** according to Porter, it is important to consider the existence of related and supporting industries that are internationally competitive.

Actually, the presence of home-based suppliers that are internationally competitive creates advantages in downstream industries if the suppliers and the end-users are, for example, located nearby because it increases their communication abilities, the flow of information that becomes quicker and constant, and an on-going exchange of ideas. This attribute would contribute thus to generate an advantage derived from close working relationships.

If there is an investment on R&D it accelerates the pace of innovation. A range of interconnected industries that operate in the same sector of production allow for an international competitiveness.

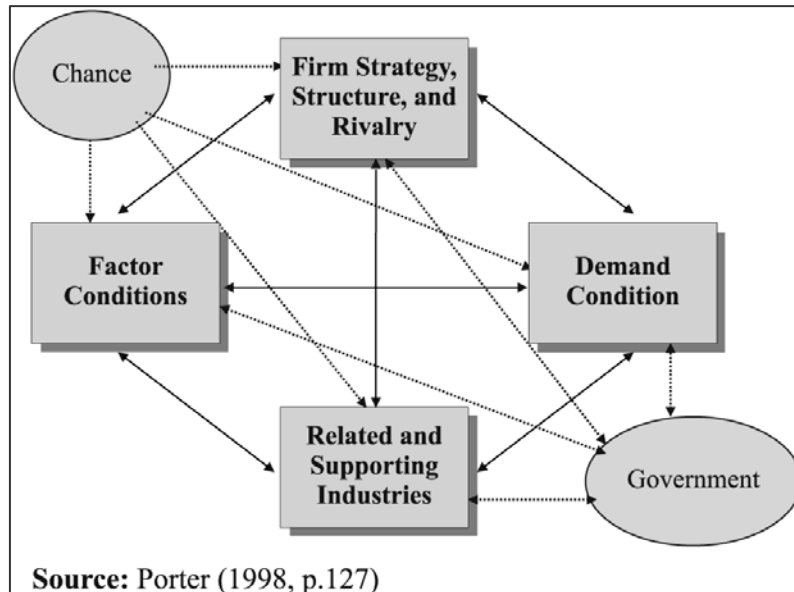
Some of the benefits that might be obtained could be the embracement of new skills and the source of entrants that will bring a novel approach to competing.

- **Firm Strategy, Structure and Rivalry:** according to this, national circumstances and context take part in how companies get started, are organized, and managed, and also previews which type of market rivalry will be in place. As Porter states (1990), there is no predetermined structure to apply to all the countries, each one must adopt the best it can to run its businesses.

Most of the times, this structure depends on the convergence of the management practices and the organizational modes in the country as well as on the sources of competitive advantage in the industry.

Finally, the presence of rivalry is a powerful way to stimulate and create a persistence of competitive advantage.

Figure 1: Determinants of National Competitive Advantage

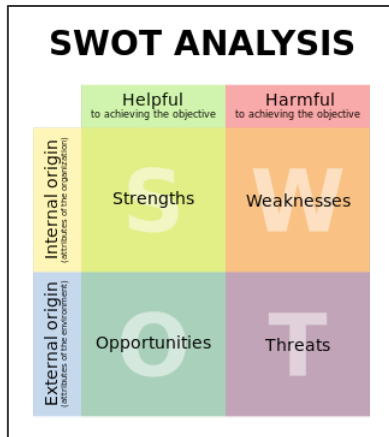


Companies usually gain a competitive advantage, when the national environment permits and supports the most rapid accumulation of specialized assets and skills; affords better on-going information and insight into product and process needs; and it pressures companies to innovate and invest. Finally according to the theory of Michael E. Porter (1998), the role of government in cluster initiatives should (See appendix 6):

- Focus on specialized factor creation,
- Avoid intervening in factor and currency markets,
- Enforce strict product, safety and environmental standards,
- Sharply limit direct cooperation among industry rivals,
- Promote goals that lead to sustained investment,
- Deregulate competition,
- Enforce strong domestic antitrust policies,
- And reject managed trade.

2.2. SWOT ANALYSIS

Figure 2: SWOT Analysis explanation



Source: Google images

SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats that can take part in any type of business project or plan. It is usually interpreted and used by a 2x2 matrix (Figure 2). This analysis is useful to spot internal factors (strengths - weaknesses) and external factors (opportunities - threats) that could affect a company.

This framework is considering strengths as all the characteristics of a determined type of business that give an advantage with respect to the others, and as the opposite definition the weaknesses, the characteristics of a given business, which cause a disadvantage relative to others.

Opportunities are elements that can be exploited by the business to generate its own advantage; by contrast, threats are the elements in the environment that could cause trouble at a certain point.

SWOT Analysis helps to explore new solutions to problems, to identify barriers that could limit goals or potential objectives and decide which direction of action will be more effective. It can also help to reveal and spot possibilities & limitations subject to change and help to organize all the ideas that the analysts come up with.

3. ORIGINS AND EVOLUTION OF CLUSTERS IN CATALONIA: A THREE PHASES PROCESS

Some recent industry analyses made by Joan Miquel Hernández Gascon, Alberto Pezzi and Antoi Soy i Casals (1993-2010), coincide in that there is a common interest to create clusters in this particular region of Spain, which is located in the Northeast in a very strategic position with good access to the border of France and having a seaside that allows commercial trade by shipping.

Catalonia's way of doing business is mainly characterized by its "Long-haul", of about two decades of experience operating in different sectors of production, the original methodology that includes the "learning by doing" experience and the strong "know-how" knowledge.

The formation of clusters in Catalonia began in 1993, when it was required an opening up of the economy to face the creation of the Single European Market. The government decided to follow the studies of Porter, detailed in his book "The Competitive Advantage of Nations" (1990), which are based on the implementation of government strategies aimed to reinforce competitiveness. The decision of choosing clusters as a central element of the strategy to develop a new approach to industrial policy was made by Antoni Subirà which was the Minister of Industry, Trade and Commerce at the time.

According to the studies of Alberto Pezzi, and several conferences made by him all over Catalonia (mainly in Barcelona), the evolution of clusters in this region of Spain has been divided into **three phases**:

I Phase (1993-2004): characterized by the micro-cluster approach as the unit of reference for competitiveness reinforcing initiatives.

The first stage of cluster development in Catalonia was to set up the concept in order to reach the improvement of operative efficiency in the enterprises that took part in the process. Most of the time focused in the Micro-cluster, which at the time was comprehended as "a group of related companies and activities in a certain, not necessarily large, geographical area".

II Phase (2004-2009): mainly based on the consolidation of internal skill development and project diversification.

This stage was important for the creation of a map that included the industrial production systems in the country. This concept of mapping was introduced by the guidelines for clusters of the European Union and it was a key element to start executing the cluster policy in Catalonia. It showed in a general basis a 42 local industrial production systems, composed of 9.000 companies that were employing 235.000 people and generating a turnover of more than 45.000 euros. In percentages represented approximately: 26% of the companies, 36% of the employment and 39% of the industrial turnover.⁴

III Phase (2009-Onward): this stage is described by the evolution of the cluster concept, that is, the institutionalization and professionalization of cluster organization. It is being considered as a tool for the Internationalization process helping companies to adapt to the new era of globalisation.

Figure 3: Phases of Clusters development in Catalonia



Source: Self-elaborated

Furthermore, the case of Catalonia has been explained and analysed in the book “On Competition” by Porter (1990).⁵

And a brief resume of what it is about is as follows:

The process of change is defined by three stages of clusters studies; the first one is where the problems and opportunities are identified. There is also the identification of basic concepts and the “goal of enhancing rather than suppressing competition”.

⁴ According to the book “Clusters and competitiveness: the case of Catalonia 1993-2010” by Joan Miquel Hernández Gascon, Alberto Pezzi and Antoi Soy i Casals.

⁵ At the end of chapter 7 that deals with Clusters and Competition: “New agendas for companies, governments and institutions”, at page 282 there is an article about “Microclusters in Catalonia”. It is divided into five sections: History, Actors, Cluster Definition, Process of Change and Results.

The second stage has its attention on a consensus vision of the cluster's future trying to unite participants and so facilitate change. Finally in the third stage, it is relevant the creation of strategies and action initiatives.

The results were as follows (*See footnote 5*):

- Catalan government acquired more knowledge.
- It resulted a new and more productive dialogue between government and business within Catalonia.
- The cluster process allowed business to assess competitive position in specific operational terms.
- The cluster approach helped numerous firms to think more strategically about their problems.
- New and more cluster-specific associations were created and old associations were revived.
- Catalan government policies shifted toward cluster upgrading:
 - Improving the market access of clusters,
 - Facilitating foreign direct investment,
 - Introducing product certification programs,
 - And instituting policies for upgrading technology.
- The stimulation of dialogue among cluster participants.
- Government officials were transformed into an informed audience for firms.

3.1. CLUSTERS, THE IMPORTANCE OF INNOVATION AND THE GOVERNMENT IMPLICATION

Innovation has proven to be a key factor for a firm in order to reach a market competitive advantage is to consider carefully **innovation**. It is essential for the firms to be able to adapt quickly to the continuous changes in technology and to face the competition of the firms from the emerging economies, which probably produce the same product with less cost of production and offer it in the global market at more affordable price to the customers.

Therefore, some important questions to answer are: *How can we be innovative? Where do the ideas come from? And why clusters are considered as innovation ecosystems?*

In general, for the companies there are several ways to be innovative: by designing a new product, creating a new production process or renewing the existing one, seeking emerging technologies from old ones, the intervention of entrepreneurs gathering opportunities, continuous reinvention, having a new marketing approach, rapid reaction towards change with help of a technological breakthrough, investing in R&D, etc. The ideas come from everywhere, but evidence shows that there are some tools that help to generate ideas such as benchmarking, brainstorming, reengineering, potentiating creativity or even the application of different management techniques (SWOT analysis, learning by doing, business processes, leadership...).

Clusters are considered as innovation ecosystems thanks to their strong scientific base, the supportive political environment, their effective networks and shared facilities, the existence of skilled workforce, the entrepreneurial culture and the availability of finance with the venture capital, business agents or joint ventures. Also because of the ability to attract highly qualified staff, ability that can be given by the image and reputation of the companies, the support services, the advantage of being a large company, by having a growing company base (start-ups, full range of companies...), their premises and infrastructure.

What's more, according to several economists, information plays a large role in the process of innovation. This information comes from the investment in market research or R&D and most of the times from the capability to go beyond existing schemes and, conventional wisdom.

On the other hand, it is also important the intervention of the **government and public institutions** by giving support to the cluster with policies that benefit both parties and allow the continuous improvement in the sector of production. Not only by creating more jobs and incrementing the productivity, but also by obtaining more competitiveness and reaching a strategic position in the international markets.

In this respect, many reports made by Harvard Business School of Management, argue that the intervention of universities is also remarkable in order to create, attract, unlock, adapt and combine clusters. Moreover, because Universities can use governmental funding to own inventions they should therefore:

- Give preference to SME.
- Grant free license to the owner.
- Report to the Government.
- Share revenue to the inventors.

As a matter of fact, the recent legal regulations adopted by the Catalan government in 2013 and 2014 go in this direction, giving support to the creation of clusters (see below, and the Appendices 1 & 2 for more details).

- “ACORD GOV/172/2013”, corporate governance treaty created by the Department of Enterprise and Occupation. It was published the 12th December 2013 at the official newspaper of Catalonia’s Government.

It explains the creation of the programme “Catalunya Clústers” and the bases to access in it. (See Appendix 1)

- “RESOLUCIÓ EMO/287/2014”, the resolution published on the 12th February 2014, which explains the development of the programme and determines the period of time that companies in the cork sector have to apply.

(See Appendix 2)

3.2. CLUSTERS INITIATIVES

According to a report elaborated by the Government of Catalonia (2010) there are several cluster initiatives divided as follows:

- **Water and energy:** energy efficiency, water treatment and photovoltaic.
- **Food:** food & beverage, pork meat, aquaculture, cork caps, packaging and functional food field.
- **Design Manufacturing:** home products and fashion textiles.
- **Mobility:** automotive industry, motorcycle and railway.
- **Health:** medical technology.

- **Industrial systems:** machine tool, agricultural machinery, advanced materials and optics & photonics.
- **Cross-sectoral:** kids related products, sport industry and cosmetics & personal care.

3.3. THE CASE OF AECORK, THE CATALAN CORK CLUSTER

Figure 4: Logo of AECORK



The cork cap cluster is part of the Food Sector; the name of the initiative in Catalonia is AECORK and is mainly located in the Region of Girona. It includes companies and other agents that are dealing with cork products and especially cork caps for the wine industry.

Source: www.aecork.com

The following are the attributes that characterize this cluster's competitiveness:

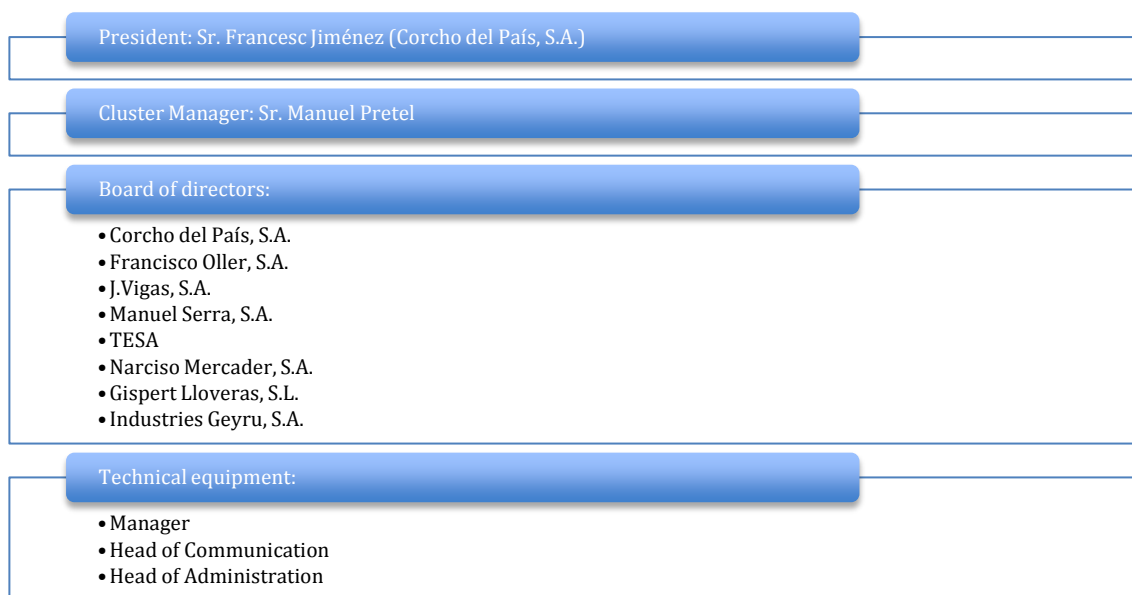
Mission and proposal of differentiation:

The cork cluster' mission is to preserve its leadership of quality inside the subsector of caps for wine and sparkling wine through innovation, communication, internationalization and sustainability.

Corporate governance and Organizational structure:

The strategy of this cluster is directly supervised by AECORK that has the organizational structure shown in *Table 1*. The president, a cluster manager, the board of directors and the technical equipment constitute the Cork Cluster in Catalonia. In *Table 2* are given some basic indicators of the economic performance of this cluster for the year 2013. As it can be seen from the data, the cork cluster is pulling together 26 companies from different sectors of activity (see *Table 3*) with a turnover of €200 million and it employs 1,000 workers. It is important to notice that 5% of the financial resources obtained are dedicated to the R&D activity.

Table 1: Organizational structure of AECORK



Source: self-elaborated based on data from “Clústers de Catalunya Anuari 2013”, by Joan Miquel Hernández Gascón, Jordi Fontrodona Francolí i Raül Blanco Díaz, page 100.

Table 2: Cork Cluster Aggregated data for 2013

INDICATORS	AMOUNT
Total amount of partners	30
Number of member companies	26
Total turnover (million €)	200
Total employment	1000
Average expenditure on R&D billing (%)	5
Average export billing (%)	50

Source: self-elaborated based on data from “Clústers de Catalunya Anuari 2013”, by Joan Miquel Hernández Gascón, Jordi Fontrodona Francolí i Raül Blanco Díaz, page 100.

“Based on cluster studies, the government provided assistance for a cork research and applications centre in Palafrugell (currently developing an international standard for cork quality)” – On competition (Michael Porter, 2008, page 282)

Table 3: Associated Companies and Agencies in the Cork Cluster (2013)

ASSOCIATED COMPANIES AND AGENCIES - CORK CLUSTER 2013		
ASSOCIACIÓ D'EMPRESARIS SURERS DE CATALUNYA (AECORK)	EMPORDÀ CORK SRL	JOSEP SUBIRANA RIERA
INSTITUT CATALÀ DEL SURO	ESCOFET CORK, S.L.	JUAN COSTA QUER, S.A.
XARXA EUROPEA DE TERRITORIS SURERS (RETECORK)	FABRILCO TAPONES DE CORCHO, S.L.	MANUF. DEL CORCHO DE CASSÀ, SC
CONSORCI FORESTAL DE CATALUNYA	FRANCISCO OLLER, S.A.	NARCISO MERCADER, S.L.
AGLO-CATALANA DEL SURO, S.L.	FRANCISCO SAGRERA, S.L.	PERE XIFRE, S.L.
BONTAP, S.L.	FRAYLE CASADEVALL, S.L.	QUALITAP, S.L.
PROSUBER 2000, S.L.	GISPert LLOVERAS, S.L.	SUBERTAP, S.A.
CORCHO DEL PAÍS, S.A.	INDUSTRIAS GEYRU, S.A.	TESA
CURQUEJO TORRENT, S.L.	J.VIGAS, S.A.	UNION PRODUCTORES CORCHO, S.A.
DE MARI TAPS, S.L.	JOAN PARRAMON SALVI, S.L.	

Source: self-elaborated based on data from “Clústers de Catalunya Anuari 2013”, by Joan Miquel Hernández Gascón, Jordi Fontrodona Francolí i Raül Blanco Díaz page 101.

4. THE SPANISH CORK SECTOR OF PRODUCTION

“The industry of cork taps in Spain was implemented for the first time in a village called Agullana in Girona’s province, around 1750 and it was an absolute initiative carried out by Catalan people in collaboration with some French operators.”⁶

Spain has been considered as “the second global power of cork production” with over 3,000 million of cork caps for wines and sparkling white wine in 2012 (Article of Inversión&Finanzas of 7th March, Unknown Author, 2013). Moreover, this sector of production has been able to overcome the economical crises thanks to an investment that improves the quality of caps due to technological changes and strict controls of quality.

The agencies that lead the initiative Cork in Spain are: AECORK, Asecor, Apcor, C.E.Liège, IcSuro (Catalan Institution of Cork), Iprocor and Retecork. There are 150 enterprises aggregated in Catalonia, Andalusia and Extremadura. In Catalonia it is placed the manufacture and commercialisation while in Andalusia and Extremadura it takes place the preparation of cork. Between 60% and 80% of cork’s production value is used as caps for wines and as a result of it the wine sector it is strictly linked to this sector.⁷

As we can see in *Table 4* below the number of enterprises in the wood and cork sector raises up to 6.904 which represents the total amount of 5,68% of the Spanish industry. It has a turnover of 5.368.144€ and we can observe that the value of exports is approximately 140 millions of € higher than the value of imports (Balance of trade). A remarkable unit is the comparative advantage index that it just represents a 0,06. We can note that the unitary labour cost it is quite big 88,3% compared to the compensation received by the employees which it represents only a 27,3%. In addition there is a low productivity of 30,9 and the investment of 5,9%.

⁶ Francisco Manuel Parejo Moruno; *El negocio del corcho en España durante el siglo XX*, 2010, page 15.

⁷ The information above has been taken from an article called “La industria de tapón de corcho factura 350 millones, el 50% en exportaciones”, published 07/03/2013, by an unknown author, and available online at <http://www.finanzas.com/noticias/empresas/20130307/industria-tapon-corcho-factura-1793268.html>.

According to *Appendix 3* this sector of production employs 2,6% of workers from the whole Spanish industry and it represents a 1,0% of production, always referring to the total amount of the Spanish production. We can see that it is not a strong sector, but it still has a considerable quantity of workers.

Table 4: Wood and cork sector in Spain

Basic Variables	Units	Values in 2012	% Total Industry
Number of companies	Units	6.904	5,68
Turnover	Million €	5.368.144	0,94
Production	Million €	5.269.289	1,03
Added Value (AV)	Million €	1.533.450	1,22
Employed	Units	49.602	2,58
Medium size	Units	7,18	0,45
Employee Compensation	Million €	27,3	0,72
Productivity (AV/Employed)	Million €	30,9	0,47
Unitary Labor Cost	Percentage %	88,3	1,52
Investment rate	Percentage %	5,9	0,44
Exports (X)	Million €	1.167,3	0,58
Imports (I)	Million €	1.029,0	0,42
Balance of Trade (NX=X-I)	Million €	138,3	-
Comparative Advantage Index	-	0,06	-

Source: Ministerio de industria, energía y turismo, Gobierno de España, Abril 2014, "Presentaciones Sectoriales Sector Madera y Corcho", available online at <http://www.minetur.gob.es/es-ES/IndicadoresyEstadisticas/Presentaciones%20sectoriales/Madera%20y%20corcho.pdf>

In the *Appendix 4* there are two charts about the recent evolution of the industrial index of production, starting by late 2007 till 2013. It shows the continuous decrement of the Spanish sector on the left and on the right the EU cork sector together with the Spanish one. There has been a soft positive behaviour in the third semester of 2013.

To sum up, the cork sector of production represents a small part within the Spanish industrial sector. One of the main reasons is because of the difficulty to extract cork out of trees, a sophisticated system is required and, normally, this product is not demanded as much as others. Nevertheless, the increment of wine production and white sparkling wine affects positively the production of more cork caps.

4.1. COMPETITIVE ANALYSIS OF THE SPANISH CORK SECTOR WITH THE SWOT FRAMEWORK

As it can be seen in *Table 5* hereafter, the following internal and external factors can be identified from the analysis of the cork sector:

Table 5: SWOT analysis of the Spanish cork sector

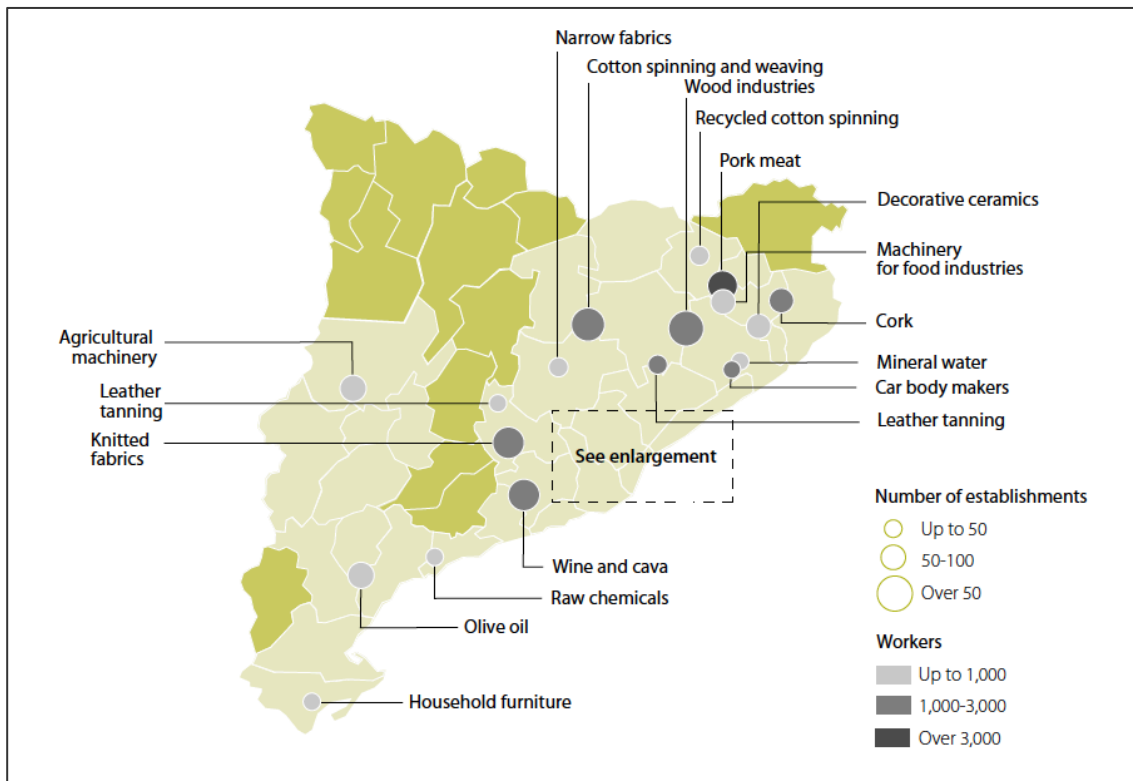
STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Strong knowledge of the industry (Know-how) • Investment in R&D • New strategic plan elaborated in 2013 • Initiatives to improve quality controls • Incorporation of laboratories in which professionals can keep doing research • Efficient allocation of production • Cost sharing & increment of production flexibility 	<ul style="list-style-type: none"> • Possible drawbacks to adapt to new regulations and Europe standards (to changes in general) • CO2 gas emissions (not controlled) • Increasement of coordination costs • Lack of control • Capital investments may be necessary
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • To increase exports by accessing to new markets, especially to: Russia, Chile, USA, China, Mexico and in the UK • Negotiate with agencies to help in the internationalization process • Vertical integration with the industrial sector to increase the commercialisation of the cork products in particular cork caps. • Customer acquisitions 	<ul style="list-style-type: none"> • Use of plastic caps for wine and sparkling white wine • Negative impact because of the economical crisis • Strong competence/rivalry with cork industries in Portugal or other countries • EU competition rules • Choosing a “wrong” partner for long-term cooperation • Transition of a bad image

Source: Self-elaborated

4.2. CORK CLUSTER IN CATALONIA

The Catalan cork cluster, as indicated in *Figure 5*, has between 50 and 100 establishments and approximately 1,000 to 3,000 workers. It is located in the region of Girona, in the North-East of Catalonia.

Figure 5: "Map of the local industrial production systems in Catalonia"



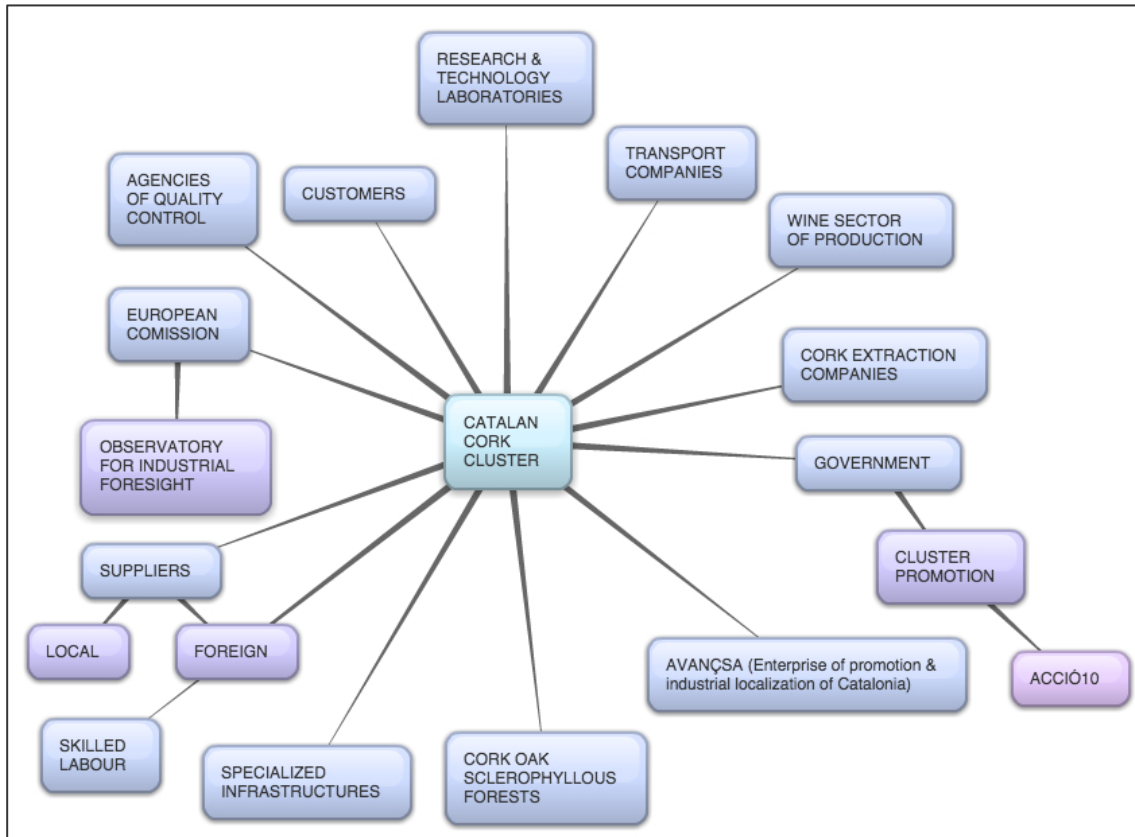
Source: "Cluster and competitiveness: the case of Catalonia (1993-2010)", page 18

Thanks to cluster studies made by some professionals in the area and following Porter's theories, the government provided assistance for a cork research and applications centre in Palafrugell. At the moment researchers are developing an international standard for cork quality.

Also in the educational area, there have been offered several courses to students to give them some knowledge of the material and its possible transformations, and so potentiate the development of new cork applications to enterprises.

4.2.1. CLUSTER MAP

Table 6: The Catalan Cork Cluster



Source: Self-elaborated

As this Map suggests, there are connections and interactions within different companies when we take a deep look into the Catalan Cork Cluster, going from the customers to suppliers, either local or foreign ones, or even looking up to government institutions such as the European Commission with the Observatory for the Industrial Foresight and the Catalan Government, with a cluster promotion programme in Acció10. There are also connections with other clusters mainly with the wine one and other type of companies that help to extract cork and transport it. Nevertheless, one of the main important bubbles in this map are the Skilled labour, cork oak Sclerophyllous forests and specialized infrastructures; because without them this cluster would not be possible. Finally, it is important to stress the presence of research & technology laboratories that keep studying and developing new processes meant to improve efficiency in the mid long term.

4.3. THE COMPETITIVE ADVANTAGES OF CATALONIA

Catalonia is a competitive region because of its original methodology of doing business thanks to almost two decades of experience. It is common to foster strategies by applying Porter’s analysis tools; this area attempts to combine know-how with process tools. Catalonia has a strong capacity to adapt to changes in doing business together with a quick implementation of innovative processes in the production sector.

This capability of starting and improving businesses, which is shown in *Table 7*, it operates in 42 sectors of production in which “wood, furniture and cork” represents a 9,5% of the total production, having 441 establishments with around 4,240 employees and a turnover of 525 million of €.

Table 7: “Local production systems in Catalonia by sector”

Sectors	Number of LPSs	% of total	Establishments	% of total	Employees	% of total	Turnover (*)	% of total
Food and beverages	4	9.5%	576	6.4%	12,288	5.2%	3,475	7.6%
Textiles-clothing and leather	9	21.4%	1,190	13.2%	22,564	9.6%	2,400	5.3%
Wood, furniture and cork	4	9.5%	441	4.9%	4,238	1.8%	525	1.2%
Paper, publishing and graphic arts	2	4.8%	1,056	11.7%	20,881	8.9%	2,650	5.8%
Chemical industries	3	7.1%	384	4.3%	25,470	10.9%	11,000	24.1%
Plastic materials	1	2.4%	803	8.9%	28,182	12.0%	3,800	8.3%
Metallurgy and metal products	1	2.4%	2,680	29.8%	39,018	16.7%	4,250	9.3%
Machinery and mechanical equipment	8	19.0%	798	8.9%	14,078	6.0%	2,155	4.7%
Electrical and electronic equipment	3	7.1%	383	4.3%	15,378	6.6%	3,250	7.1%
Transport materials	5	11.9%	449	5.0%	50,714	21.7%	11,975	26.2%
Various manufacturing industries	2	4.8%	247	2.7%	1,399	0.6%	160	0.4%
Total sectors	42	100%	9,007	100%	234,210	100%	45,640	100%

(*) In millions of euros.
Source: Hernández, J. M. et al. (2005): *Map of Local Industrial Production Systems in Catalonia*.

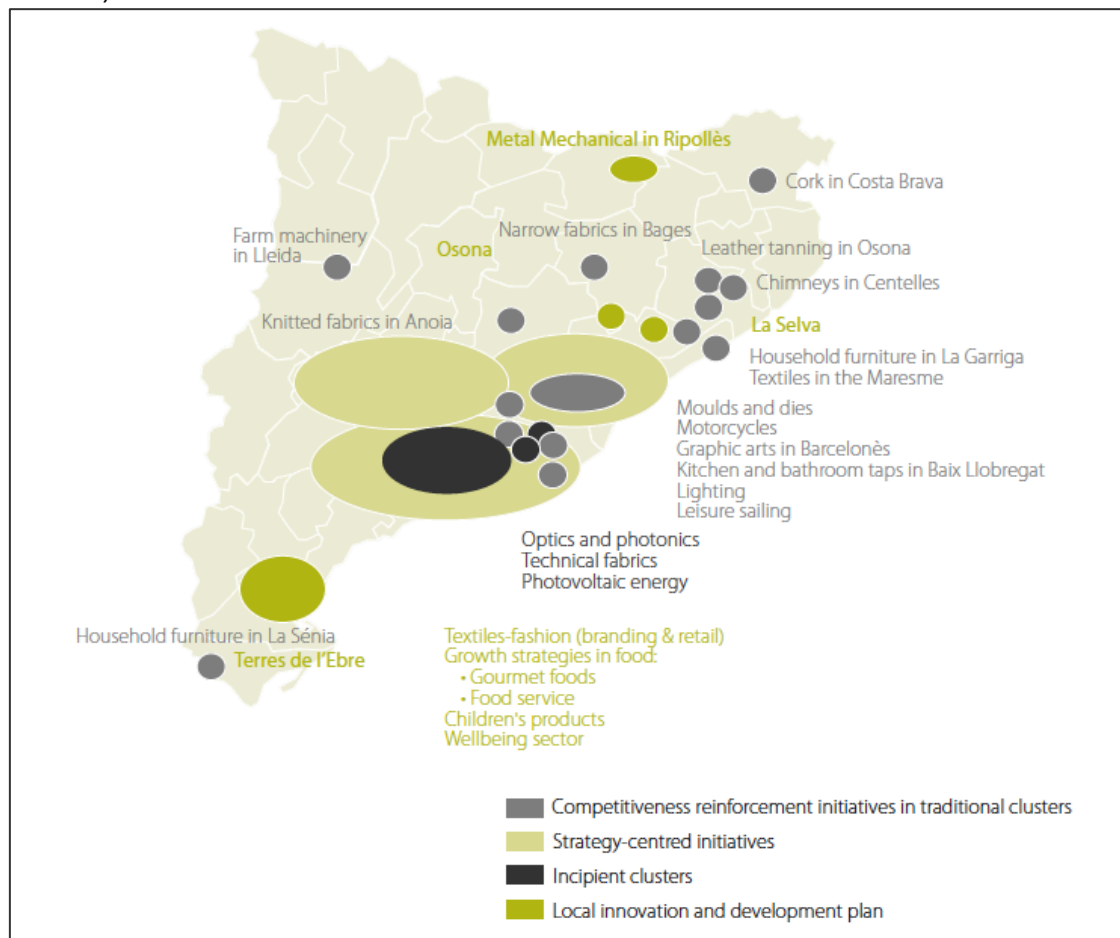
Source: “Cluster and competitiveness: the case of Catalonia (1993-2010)”, page 67

When innovating in cluster policies there are different types of projects: local cluster competitive reinforcement initiatives, strategy-focused clusters, and incipient and emerging clusters.

According to the study “The new industry in Catalonia: renewing and adapting cluster policy to the challenges of the global competitiveness scenario” published by Antoni Soy⁸ and Alberto Pezzi (2012)⁹, the Cork industry in Costa Brava is a clear example of a **local cluster competitiveness reinforcement initiative** (Figure 6). Its objective is to reinforce the cluster competitiveness by promoting strategic change and horizontal cooperation initiatives.

In conclusion, the analysis shows that it is an advantage to have two or more companies of the same industry belonging to the same supply chain stage and usually producing and trading with the same products, and working together. This type of alliance, that is, the creation of a hub, helps firms to add to their strength and gain benefits.

Figure 6: “Competitiveness reinforcement initiatives and Cluster positioning in Catalonia (2004-onwards)”



Source: “Cluster and competitiveness: the case of Catalonia (1993-2010)”, page 22

⁸ Ex- Deputy Ministry for Industry and Enterprise.

⁹ Director Diagnostic and Foresight Area Observatory for Industrial Foresight.

4.4. DIAMOND MODEL

In a common basis the creation of a cluster allows all the forming companies to access to specialized inputs, employees, information and most of the time even to institutions and public goods. There are incentives and performance measurement together with different types of complementarities.

FACTOR CONDITIONS

When analysing this first attribute of the Diamond model it is important to mention the strong capability in upgrading and deploying resources over time to meet the upcoming demand, owning important factors such as skilled resources (natural, human and capital) and technological/scientific base for developing a better product. New innovations and methods have given the local industry the comparative advantage.

Furthermore, the existence of an infrastructure necessary to compete in the cork industry and specialized to its particular needs (factor quality and factor specialization). Thus considering the infrastructure the whole of a physical, administrative, of information, scientific and technological.

Nevertheless, there is the collection of cluster information through trade associations, development of courses for managers on regulatory, quality and managerial issues. And to keep maintaining a close liaison with infrastructure providers to address specialized cluster needs.

CONTEXT FOR FIRMS, STRATEGY & RIVALRY

Given the fact that there is a local context that encourages appropriate forms of investment and sustained upgrading. With vigorous competition among locally-based rivals and rivals set outside the country for instance in Portugal.

This cluster works through trade fairs and delegations, collaborates with the government initiatives to export promotion efforts and create directories of cluster participants.

The strategy which is explained in mission and proposal of differentiation, defines the cork cluster' mission to preserve its leadership of quality inside of the subsector of caps for wine and sparkling wine through innovation, communication, internationalization and sustainability. Those are the main areas where to focus its attention.

DEMAND CONDITIONS

A strong trend setting local markets has helped this local firms anticipate to global trends and emerging buyer needs. Together with a strong demand from champagne industries in Catalonia, due to the importance of cava, which seek cork stoppers either from natural cork products or as granulate-agglomerated products depending on the cork used. Also, the demand of cork caps for sparkling wines produced in neighbouring areas.

There is pressure of companies inside the cork cluster to meet high standards, usually required by sophisticated and demanding local customers, urging those companies to improve, innovate and upgrade into more advanced segments. It is very useful to work with the government to streamline regulations and modify them to encourage innovation by establishing local testing and standards organizations.

RELATED & SUPPORTING INDUSTRIES

Catalonia has a high local availability of research and training services, which give strength to the country, but on the other hand in terms of quantity and quality it does not have a high competitiveness of suppliers or the access to the latest technologies, so as a reason of that there should be an improvement in this sector and the potential of the country would increase.

This cluster encourages a certain pressure on local suppliers to lift their game. Thus, an advantage based on close working relationships among companies inside the cluster. Thanks to a quick and constant flow of information, and on-going exchange of ideas and share processes in order to accelerate the pace of innovation.

With the presence of capable locally based suppliers and related industries, which establish a cluster-based trade association, attracts local investments through individual and collective efforts. Besides, local competition has created innovations and cost effectiveness for the cluster.

6. DISCUSSION AND SUGGESTIONS

The competitive analysis of the Catalan cork cluster allows highlighting the following aspects in favour of cluster initiatives in the territory:

- Helps the region of Girona to understand how its economy works as a system way and which political initiatives will have a better impact in the mid long run.
- Gives to the regional government new ways to interact with firms and answer to collective demands of its workers.
- Offer an alternative to share of services and information among all the firms belonging to the cluster. The cluster, as a network, does not pay attention only to individual functions it is a sum of all the companies' actions.
- Permit the organizations that have a connection with the cluster to inform and prepare workers, which are this way more productive; firms are thus, more informed and better connected with employees' necessities.
- Reassign resources in order to be maximized inside the cluster business.
- Constructs a clear and specific framework based on strengths and shared among all its participants.
- Has a better performance in terms of increasing and achieving international competitiveness.
- Attracts foreign investment.
- Development of advanced and specialized factors.
- Collection and dissemination of economic information.
- Export promotion.
- Regulatory reforms.
- Introduction of product certification programmes.
- Instituting policies for upgrading technology.
- Incrementing the work force's implication to keep elaborating new processes of production and working in research and development.

Suggestions

Some scholars advocate also in favour of a greater involvement of the academic institutions, like universities, in studying and promoting the cluster initiatives and in particular, the analysis of the cork cluster.

More implication would increase the possibility to develop new useful ideas to improve technical areas of the cluster.

Moreover, the existence of an active involvement from the Central and the Regional Government in order to maintain clusters initiatives in Catalonia. One possible way would be to support them through economic incentives.

The creation of programmes or courses open to people interested in clusters to give basic notions on the topic and work on possible fresh thoughts and ideas analysed by competent workers of the area and taken into account.

7. LIST OF REFERENCES

BOOKS:

1. PORTER, Michael. *On Competition*, Updated and Expanded Edition of A Harvard Business Review Book, 2008.
2. HERNÁNDEZ GASCÓN, Joan Miquel; PEZZI, Alberto and SOY I CASALS, Antoni. *Clusters and Competitiveness: the case of Catalonia (1993-2010)*, Government of Catalonia, Ministry of Enterprise and Labour. First edition: Barcelona, February 2010.

This book is the translation of: *Clústers i competitivitat: el cas de Catalunya (1993-2010)*, Papers d'economia industrial número 31, Observatori de Prospectiva Industrial, Barcelona, 2010.

PAPERS:

1. HERNÁNDEZ GASCÓN, Joan Miquel; FONTRDONA FRANCOLÍ, Jordi; BLANCO DÍAZ, Raül. *Clústers de Catalunya Anuari 2013*, Generalitat de Catalunya Departament d'Empresa i ocupació. Barcelona, June 2014, page 100 and 101.
2. PAREJO MORUNO, Francisco Manuel. *El negocio del corcho en España durante el siglo XX*, Estudios de Historia Económica, N.º 57, Banco de España, Eurosistema, 2010, page 10.
3. *Presentaciones Sectoriales Sector Madera y Corcho*, Ministerio de industria, energía y turismo; Gobierno de España”, available online at:
<http://www.minetur.gob.es/es-ES/IndicadoresyEstadisticas/Presentaciones%20sectoriales/Madera%20y%20corcho.pdf>.
1. GÓMEZ MINUJÍN, Gala. *Competitividad y complejos productivos: teoría y lecciones de política*, CEPAL - SERIE Estudios y perspectivas – Oficina de la CEPAL en Buenos Aires.
2. A. MARTINEZ CAÑAS, Manuel; SANTIAGO BELTRÁN, Ramón y TRINIDAD LOZANO, María José. *Producción e industrialización del corcho en Extremadura*.
4. RIVES, Jesús; FERNANDEZ-RODRIGUEZ, Ivan; RIERADEVALL, Joan and GABARRELL, Xavier. *Environmental analysis of the production of natural cork stoppers in southern Europe (Catalonia e Spain)*.

ARTICLES:

1. *La industria de tapón de corcho factura 350 millones, el 50% en exportaciones*, published 07/03/2013, by an unknown author, and available online at <http://www.finanzas.com/noticias/empresas/20130307/industria-tapon-corcho-factura-1793268.html>, [Accessed: 27 December, 2014].

LINKS:

1. "Universitat de Girona web page", *How to write the final project*, http://www.udg.edu/Portals/160/docs/centre_redaccio/Com%20es%20fa%20el%20treball%20de%20final%20de%20grau.pdf, [Accessed: 16 September, 2014].
2. "WordReference", *Online Language Dictionaries, Spanish-English Dictionary*, <http://www.wordreference.com>, [Accessed: several times while writing the dissertation].
3. "Cambridge Dictionaries Online", *Inglés de negocios*, <http://dictionary.cambridge.org/es>, [Accessed: several times while writing the dissertation].
4. "Synonym", *Online web page to look for synonyms, Antonyms and Definitions in English*, <http://www.synonym.com>, [Accessed: several times while writing the dissertation].
5. "Slideshare", *Supply Chain Management: Strategic Issues by Prof. Dr. Wollny*, <http://es.slideshare.net/uapippo/vertical-and-horizontal-cooperation-in-a-supply-chain>, [Accessed: 25 September, 2014].
6. "Wikipedia", *The Free Encyclopedia*, www.wikipedia.com, [Accessed: several times while writing the dissertation].
7. "Generalitat de Catalunya", <http://web.gencat.cat/ca/>, [Accessed: several times while writing the dissertation].
8. "ACCIÓ, Agència per a la competitivitat de l'empresa", *Generalitat de Catalunya*, <http://accio.gencat.cat/cat/estrategia-empresarial/clusters/que-es.jsp>, [Accessed: several times while writing the dissertation].
9. "TCI the global practitioners network for competitiveness, clusters and innovation", <http://www.tci-network.org/>, [Accessed: 29 September, 2014].

10. "Departament d'Empresa i Ocupació", *Àrea de Desenvolupament empresarial, Generalitat de Catalunya*,
http://empresaiocupacio.gencat.cat/ca/treb_ambits_actuacio/emo_industria/emo_area_desenvolupament_empresarial, [Accessed: 25 October, 2014].
11. "Social Capital Formation SCF", *Planning Network of Ontario*,
<http://socialcapital.spno.ca/whatisit.html>, [Accessed: 25 October, 2014].
12. "Cross Industry 2.0 New Business Models: The Business Challenge and Orchestrating OSS BSS for New Revenue", *Stratecest, A Division of FROST & SULLIVAN, August 2010*,
https://www.infonova.com/pdf/Cross_Industry_2.0_New_Business_Models.pdf, [Accessed: 25 October, 2014].
13. "Slideshare", *Els clusters com a eina de reforç de la competitivitat: experiències a nivell europeu i mundial, Col·legi d'Economistes 2012*,
<http://es.slideshare.net/albertopezzi>, [Accessed: 01 November, 2014].
14. "Google", *Diamond model picture*,
https://www.google.com/search?q=diamond+model&espv=2&biw=1024&bih=503&source=lnms&tbm=isch&sa=X&ei=879oVIDXItPhaleHgPgH&ved=0CAYQ_AUoAQ#facrc=_&imgdii=38Pc88mS7Hcn1M%3A%3BeOBuryQ8-WXKFM%3B38Pc88mS7Hcn1M%3A&imgrc=38Pc88mS7Hcn1M%253A%3Bz7u7sQUqGwZrJM%3Bhttp%253A%252F%252Fupload.wikimedia.org%252Fwikipedia%252Fen%252Fthumb%252F0%252F09%252FThe_Porter_Diamond.svg%252F1280px-The_Porter_Diamond.svg.png%3Bhttp%253A%252F%252Fen.wikipedia.org%252Fwiki%252FDiamond_model%3B1280%3B837, [Accessed: 16 November, 2014].
15. "Cluster Analysis", *Chapter 16*, http://www.norusis.com/pdf/SPC_v13.pdf, [Accessed: 16 November, 2014].
16. "XIFRA", *Sistema d'Informació Socioeconòmica local*,
http://www.ddgi.cat/xifra/menu_ini.asp, [Accessed: 16 November 2014].
17. "IDESCAT", *Sector del suro la fusta i la cistelleria a Catalunya*,
<http://www.idescat.cat/industria/ei?tc=1&se=26&ccae=2&lang=en>, [Accessed: 16 November, 2014].

18. "Wikipedia", *Swot analysis picture*,
https://www.google.com/search?q=SWOT+ANALYSIS+MODEL&espv=2&biw=1024&bih=564&tbm=isch&tbo=u&source=univ&sa=X&ei=0bCWVKPjDcGzUcewhKgL&ved=0CCEQsAQ#facrc=_&imgdii=_&imgrc=WUCtawLzA6f0fM%253A%3Bq7xO27mgev8nOM%3Bhttp%253A%252F%252Fupload.wikimedia.org%252Fwikipedia%252Fcommons%252Fthumb%252F0%252F0b%252FSWOT_en.svg%252F2000px-SWOT_en.svg.png%3Bhttp%253A%252F%252Fen.wikipedia.org%252Fwiki%252FSWOT_analysis%3B2000%3B2250, [Accessed: 21 December 2014].
19. "Biblioteca de la Universitat de Girona", *Com citar la Bibliografia*,
<http://www.udg.edu/LaBibliotecaforma/Comcitardocuments/tabid/11962/language/ca-ES/Default.aspx>, [Accessed: 25 January, 2015].
20. "Footnotes&Bibliography, Chicago 16th A STYLE, 'How-to' guide", *The University of Queensland – Library*,
https://www.library.uq.edu.au/_/sites/default/files/storage/webfile_read/files/referencing/chicago16A.pdf, [Accessed: 25 January, 2015].

8. APPENDICES

1. ACORD GOV/172/2013.
2. RESOLUCIÓ EMO/287/2014.
3. Chart of Employed and Production respect the total industry in Spain (April 2014), Spanish Government report.
4. Chart: *Index of industrial production (2007-2013)*
5. Table: *The local production systems in Catalonia*
6. Article: At the end of chapter 7 where Michael Porter deals with Clusters and Competition: “New agendas for companies, governments and institutions”, at page 282 there is an article about “Microclusters in Catalonia”. It is divided into five sections: History, Actors, Cluster Definition, Process of Change and Results.

DISPOSICIONS**DEPARTAMENT D'EMPRESA I OCUPACIÓ****ACORD GOV/172/2013, de 3 de desembre, de creació del Programa Catalunya Clústers.**

L'economia mundial es troba davant dos grans desafiaments, el canvi tecnològic i la globalització, i per afrontar-los els països més avançats desenvolupen polítiques de reforçament de la competitivitat que giren al voltant de dos eixos, la innovació i la internacionalització.

En aquest context apareix un nou model industrial d'àmbit internacional que es manifesta en la pèrdua de diferenciació entre l'activitat manufacturera i el sector serveis, i que provoca que els models de negoci i les estratègies que eren útils per competir en el passat hagin quedat desfasats. És per això que la política pública dissenya i implementa línies de treball orientades a acompanyar les empreses en aquest procés de transformació econòmica, entre les quals ocupa un paper destacat la política de clústers, entesa com aquell conjunt d'iniciatives de política industrial i empresarial dirigides a millorar l'eficiència competitiva de les empreses per mitjà del replantejament de la seva estratègia i la seva contínua adaptació als desafiaments del mercat global.

Els models de política de desenvolupament econòmic basats en els clústers consideren que la competitivitat de l'empresa depèn, bàsicament, tant de la seva estratègia com de la qualitat de l'entorn en el qual treballa (condicions de la demanda, indústries relacionades i de suport, dotació de factors de producció i estructura del teixit econòmic, entre d'altres). Les polítiques de clústers, per tant, posen l'èmfasi en la generació de projectes transformadors fonamentats en la diferenciació estratègica.

Catalunya va ser pionera en el desenvolupament d'iniciatives de reforçament de la competitivitat basades en la potenciació dels clústers presents en el seu territori, i a principis de la dècada dels noranta va començar a implementar polítiques inspirades en la comprensió dels desafiaments estratègics de les empreses i en l'execució d'actuacions tendents a adaptar el teixit industrial a les noves maneres de competir. Gràcies a aquesta llarga experiència, Catalunya ha desenvolupat capacitats diferencials en l'àmbit de la política de clústers que s'expressen en la presència al seu territori d'organismes internacionals de referència, escoles de negoci amb reputació en la formació de personal especialitzat en aquesta disciplina, consultores de prestigi internacional, i una Administració fortament implicada en acompanyar les empreses en el camí de la transformació econòmica.

En poc més de dues dècades el concepte de clúster ha assolit una gran difusió i ha estat adoptat per un gran nombre de països i regions d'arreu del món com a eina per dissenyar i implementar polítiques de desenvolupament de la competitivitat. També a Catalunya la utilització dels clústers com a eina al servei de les empreses s'ha popularitzat extraordinàriament en els darrers anys, la qual cosa s'ha traduït en l'aparició de nombroses iniciatives que utilitzen aquesta denominació.

És per això que, vist que el Pla de Govern 2013-2016 estableix el desenvolupament d'una política activa de suport al sector industrial per consolidar Catalunya entre els països més valorats a nivell internacional, és voluntat del Govern posar en marxa un programa, el contingut del qual es publica a l'annex d'aquest Acord, adreçat a impulsar la competitivitat empresarial, sistematitzar l'actuació de la Generalitat de Catalunya en l'àmbit de la política de clústers i contribuir a racionalitzar les iniciatives existents en aquest camp.

Per tot això exposat, a proposta del conseller del Departament d'Empresa i Ocupació, el Govern

Acorda:

-1 Crear el Programa Catalunya Clústers, adscrit al Departament d'Empresa i Ocupació, amb la finalitat d'impulsar la competitivitat de l'economia catalana, sistematitzar l'actuació de la Generalitat de Catalunya en l'àmbit de la política de clústers i contribuir a la racionalització del mapa de les associacions clústers existents a Catalunya, i que s'adjunta com a annex.

-2 Disposar la publicació d'aquest Acord al *Diari Oficial de la Generalitat de Catalunya*.

Barcelona, 3 de desembre de 2013

Jordi Baiget i Cantons

Secretari del Govern

Annex

Programa Catalunya Clústers

-1 Missió i objectius

1.1 La missió del Programa Catalunya Clústers és reforçar la competitivitat del teixit empresarial mitjançant la dinàmica dels clústers, la sistematització de l'actuació de la Generalitat de Catalunya en l'àmbit de la política de clústers i la racionalització de l'ecosistema de clústers de Catalunya.

1.2 El Programa Catalunya Clústers s'adscriu al departament competent en matèria d'indústria.

1.3 L'Agència de Suport a l'Empresa Catalana (ACCIÓ) dona suport tècnic i material per al desenvolupament d'aquest Programa.

1.4 La direcció del Programa l'exercirà la persona titular de l'Àrea de Desenvolupament Empresarial de la Direcció General d'Indústria.

Les seves principals funcions són, a títol enunciatiu i no limitatiu: coordinar i gestionar el desenvolupament del Programa Catalunya Clústers, planificar el seguiment dels requisits de participació al Programa, fer el seguiment de les diverses actuacions del Programa, i actuar com a secretari/ària de la Comissió consultiva.

1.5 La vigència del Programa quedarà condicionada a la del Pla de Govern 2013-2016 i, si s'escau, es podrà prorrogar amb l'instrument jurídic corresponent.

1.6 D'acord amb la missió esmentada al punt 1.1, el Programa Catalunya Clústers té els objectius següents:

- a) Contribuir a la consolidació d'un teixit econòmic competitiu que posa l'èmfasi en la innovació i la internacionalització de les seves empreses.
- b) Fomentar la utilització dels clústers com a instrument per a millorar la competitivitat de les empreses.
- c) Convertir l'ecosistema de clústers de Catalunya en un referent internacional.
- d) Enfortir al sistema de governança dels clústers.
- e) Contribuir a l'excel·lència dels clústers mitjançant la formació contínua dels seus *clusters managers*.
- f) Connectar internacionalment els clústers catalans per tal d'intercanviar experiències, tecnologia i talent, i pensant en la generació de projectes d'alt impacte.
- g) Millorar la visibilitat internacional de l'ecosistema de clústers de Catalunya, en general, i dels seus integrants, en particular.
- h) Fomentar que les iniciatives de clústers tinguin la dimensió suficient per establir relacions de cooperació internacional i projectes d'innovació potencials de certa envergadura.
- i) Promoure la coordinació entre els agents de la quàdruple hèlix (universitats, empreses, administracions i societat civil) en l'àmbit de les iniciatives de clústers.
- j) Coordinar les actuacions dels departaments de la Generalitat de Catalunya en l'àmbit de les iniciatives de clústers per tal de sistematitzar la seva activitat i maximitzar el resultat de la seva intervenció.

-2 Definició de clúster

CVE-DOGC-A-13345017-2013

Als efectes previstos en aquest Programa, s'entén per clúster una concentració d'empreses interconnectades, proveïdors especialitzats i de serveis, empreses en indústries relacionades i institucions associades en àrees específiques que competeixen però que, alhora, també cooperen. Aquests conjunt d'agents comparteixen reptes i/o negoci. L'àmbit geogràfic identificat és Catalunya.

-3 Serveis que ofereix el Programa Catalunya Clústers

Els clústers que s'integrin al Programa Catalunya Clústers podran gaudir dels serveis següents:

- a) Utilització de la marca associada al Programa.
- b) Orientació estratègica
- c) Capacitació de *clusters managers*
- d) Tutoria i assessorament en matèria de cooperació internacional i d'innovació
- d) Activitats de networking.
- e) Altres que el Departament d'Empresa i Ocupació impulsi en l'àmbit de la dinamització de clústers.

-4 Requisits per a la participació al Programa Catalunya Clústers

Els clústers que vulguin entrar al Programa Catalunya Clústers han de satisfer els requisits següents:

- a) Representar iniciatives que donin cobertura a tot el territori català, com a mínim.
- b) Gaudir de personalitat jurídica pròpia, no tenir afany de lucre, i estar domiciliat a Catalunya,
- c) Disposar d'un òrgan de govern integrat majoritàriament per empreses privades.
- d) Tenir un nombre mínim de socis.
- e) Abastar una mínima dimensió de mercat.
- f) Disposar d'un pla estratègic, el contingut mínim del qual l'establirà l'instrument jurídic que desenvolupi el Programa.
- g) Disposar d'un *cluster manager* professional amb independència de què la seva vinculació amb el clúster sigui laboral o mercantil.
- h) Disposar de la certificació *Bronze Label* que atorga l'European Secretariat for Clúster Analysis (ESCA).
- i) Tenir representants de la cadena de valor entre els seus associats

L'abast d'aquestes condicions quedaran recollides en el desenvolupament d'aquest Programa, d'acord amb el que preveu l'apartat 6 d'aquest annex

-5 Comissió consultiva del Programa

5.1 La Comissió consultiva està presidida pel conseller/a del departament competent en matèria d'indústria, té com a vicepresident/a el secretari/ària en matèria d'empresa i competitivitat, i com a secretari/ària el/la cap de l'Àrea de Desenvolupament Empresarial de la Direcció General d'Indústria.

5.2 La Comissió consultiva es reuneix com a mínim una vegada a l'any, a proposta del conseller/a competent en matèria d'indústria, i està formada per:

El/la conseller/a del departament competent en matèria d'indústria.

El/la secretari/ària d'Empresa i Competitivitat.

El/la director/a general d'Indústria.

El/la conseller/a delegat/da del l'Agència de Suport a l'Empresa Catalana.

El/la cap de l'Àrea de Desenvolupament Empresarial de la Direcció General d'Indústria.

El/la president/a de cada clúster integrat al Programa.

5.3 Les funcions d'aquesta Comissió consultiva són:

Intercanviar informació en matèria de clústers.

Assessorar sobre les iniciatives de suport a la competitivitat basades en la potenciació dels clústers de la Generalitat de Catalunya.

Promocionar els projectes i les iniciatives entre els clústers.

Qualsevol altra que li sigui encomanada o que es decideixi d'acord amb les normes de funcionament de la Comissió.

5.4 La Comissió determina les seves normes de funcionament, i són d'aplicació supletòria les normes que regulen el funcionament dels òrgans col·legiats que preveu la Llei 26/2010, del 3 d'agost, de règim jurídic i de procediment de les administracions públiques de Catalunya.

5.5 Els membres de la Comissió consultiva no percebran dietes, ni drets d'assistència per concórrer a les reunions.

-6 Desenvolupament

El desenvolupament del Programa Catalunya Clústers és competència de la Direcció General d'Indústria per mitjà de l'instrument jurídic corresponent.

(13.345.017)

DISPOSICIONS**DEPARTAMENT D'EMPRESA I OCUPACIÓ****RESOLUCIÓ EMO/287/2014, de 12 de febrer, de desenvolupament del Programa Catalunya Clústers, i per la qual s'estableixen les convocatòries per a l'any 2014 per accedir al Programa Catalunya Clústers.**

El Govern de Catalunya, mitjançant l'Acord GOV/172/2013, de 3 de desembre de 2013 (DOGC núm. 6520, de 12.12.2013), crea el Programa Catalunya Clústers, adscrit al Departament d'Empresa i Ocupació, amb la finalitat d'impulsar la competitivitat de l'economia catalana, sistematitzar la seva actuació en l'àmbit de la política de clústers i contribuir a la racionalització de les iniciatives existents en aquest camp.

El Pla de Govern 2013-2016 estableix el desenvolupament d'una política industrial activa per consolidar Catalunya entre els països de referència a nivell internacional. En aquest context, l'actuació sobre els clústers és una peça fonamental d'aquest Pla, tenint en compte que el teixit econòmic català està molt clusteritzat i format essencialment per pimes. Addicionalment la política de clústers representa un instrument fonamental per facilitar i accelerar el canvi de model productiu que necessita el país.

L'adopció del Programa constitueix, en definitiva, un pas endavant per assolir l'objectiu de reforçar la competitivitat del teixit productiu del país mitjançant el reforçament de la indústria en sentit ampli, el suport a les pimes i s'alineja també amb els objectius marcats per la Unió Europea pel que fa a les recomanacions en política de clústers.

En aquest sentit, la comunicació de la Comissió Europea de l'any 2008 titulada Towards World Class Clusters in the European Union (COM2008) 352 final, ja posava de manifest la necessitat de disposar d'organitzacions clúster més eficients en termes de massa crítica, amb una gestió professionalitzada i amb una vocació internacional.

El Programa Catalunya Clústers es troba perfectament alineat amb aquests objectius i aposta per la consolidació dels clústers existents i la renovació del teixit industrial català cap a activitats més innovadores, d'alt valor afegit i abast internacional.

Per tot això i, d'acord amb el punt 6 de l'Annex de l'Acord de Govern esmentat,

Resolc:

- 1 Desenvolupar el Programa Catalunya Clústers, que s'adjunta com a annex, amb la finalitat d'impulsar la competitivitat de l'economia catalana, sistematitzar l'actuació de la Generalitat de Catalunya en l'àmbit de la política de clústers i contribuir a la racionalització del mapa de les associacions clústers existents a Catalunya.
- 2 Establir les convocatòries per a l'any 2014 per accedir al Programa Catalunya Clústers.
- 3 Aquesta Resolució entrarà en vigor l'endemà de la publicació al *Diari Oficial de la Generalitat de Catalunya*.

Barcelona, 12 de febrer de 2014

Antoni M. Grau i Costa
Director general d'Indústria

Annex

Desenvolupament del Programa Catalunya Clústers

-1 Objecte

L'objecte d'aquesta Resolució és el de regular la participació i l'accés al Programa Catalunya Clústers.

-2 Àmbit subjectiu

A efectes del Programa Catalunya Clústers, s'entendrà per clúster tota concentració d'empreses interconnectades, proveïdors especialitzats i de serveis, empreses en indústries relacionades i institucions associades en àrees específiques, que competeixen però alhora també cooperen. Una organització clúster és una entitat legalment constituïda sense ànim de lucre que aglutina empreses i altres actors del clúster i proporciona serveis als seus participants. Aquests conjunts d'agents comparteixen reptes i/o negoci. L'àmbit geogràfic identificat és Catalunya.

Poden formar part del Programa Catalunya Clústers, les entitats legalment constituïdes, amb personalitat jurídica pròpia, sense afany de lucre i amb domicili social a Catalunya, que tinguin com a objecte social la millora de la competitivitat de les empreses i una contrastada experiència en dinamització de clústers.

-3 Serveis que ofereix el Programa Catalunya Clústers

Els clústers que s'integrin al Programa Catalunya Clústers podran gaudir dels serveis següents:

- a) Utilització de la marca associada al Programa.
- b) Orientació estratègica.
- c) Capacitació de *cluster managers*.
- d) Tutoria i assessorament en matèria de cooperació internacional i d'innovació.
- e) Activitats de *networking*.
- f) Vehiculació dels instruments de política d'innovació i internacionalització a través dels clústers.
- g) Altres que el Departament d'Empresa i Ocupació impulsi en l'àmbit del treball en clústers.

-4 Comissió d'Avaluació i Seguiment

La Comissió d'Avaluació i Seguiment és l'òrgan instructor encarregat de la valoració de les sol·licituds presentades, així com l'òrgan responsable del seguiment del Programa i dels seus participants.

La Comissió està presidida pel director/a del Programa i està integrada també pel/per la gerent de Dinamització de Clústers de l'Agència per a la Competitivitat de l'Empresa (d'ara endavant ACCIÓ), el/la gerent d'estratègia competitiva i de clústers d'ACCIÓ i dos especialistes d'ACCIÓ, actuant un d'ells com a secretari/ària a proposta del president/a.

A la reunió hi podran assistir amb veu però sense vot consultors/ores externs a la Direcció General d'Indústria i a l'Agència de Suport a l'Agència Catalana, en qualitat d'assessors/ores experts.

La Comissió es reuneix com a mínim una vegada a l'any i dóna entrada a les sol·licituds dels clústers amb la mateixa periodicitat.

Les funcions d'aquesta Comissió són:

- a) Com a òrgan instructor:

Valorar les sol·licituds d'entrada al Programa seguint els requisits establerts als punts 5 i 6 d'aquesta Resolució.

Realitzar un informe final que reculli les valoracions fetes a les sol·licituds corresponents i elevar-lo al director/a general d'Indústria perquè realitzi l'avaluació final i n'emeti la resolució corresponent.

Qualsevol altra que li pugui correspondre.

b) Com a òrgan de seguiment:

Obrir les convocatòries de participació al Programa i determinar-ne les dates, la forma, el lloc i els terminis de presentació de sol·licitud.

Realitzar les actuacions de seguiment i control necessàries per al bon funcionament del Programa, que són, a títol enunciatiu i no limitatiu, les següents: monitoratge dels participants del Programa, control de la bona qualitat del Programa i altres que hi puguin correspondre.

Vetllar pel bon ús de la marca clúster per part dels participants al Programa.

Proposar la revocació de la participació d'un clúster en el Programa en cas d'incompliment dels requisits establerts en el punt 5, mitjançant un informe proposat de revocació, que elevarà al director/a general d'Indústria perquè dicti la resolució corresponent.

Qualsevol altra que li pugui correspondre.

La Comissió determinarà les seves pròpies normes de funcionament, sent aplicables supletòriament les normes reguladores del funcionament dels òrgans col·legiats que preveu la Llei 26/2010, del 3 d'agost, de règim jurídic i de procediment de les administracions públiques de Catalunya.

-5 Requisits per accedir al Programa Catalunya Clústers

Per integrar-se a aquest programa, les organitzacions clúster han de complir els requisits següents:

- a) Estar alineat amb la política de clústers de la Generalitat de Catalunya.
- b) Tenir un perímetre d'actuació que abasti, com a mínim, l'àmbit geogràfic català.
- c) Tenir personalitat jurídica pròpia, legalment constituïda, amb domicili social a Catalunya.
- d) No tenir afany de lucre i tenir com a objecte social la millora de la competitivitat de les empreses.
- e) Comptar amb una junta directiva en què, com a mínim, el 60% dels membres de l'organització clúster siguin empreses privades.
- f) Disposar, com a mínim, de 20 empreses associades.
- g) Comptar amb un mínim de facturació agregada dels seus socis de 100 milions d'euros.
- h) Disposar d'un pla estratègic a quatre anys que inclogui:

Caracterització del clúster.

Mapatge de les empreses i agents del clúster, i la seva quantificació, així com també la cadena de valor que el defineix.

Diagnosi de la situació competitiva de les empreses del clúster.

Reptes estratègics de les empreses del clúster.

Pla d'accions prioritzades que ha de dur a terme el clúster amb indicadors de seguiment corresponents.

Estructura, gestió i finançament del clúster.

Pla de màrqueting i comunicació.

Pla d'internacionalització.

Planificació i memòria anual d'activitats i projectes.

- i) Disposar dels serveis d'un *cluster manager* professional amb independència que la seva vinculació amb el clúster sigui laboral o mercantil.

El *cluster manager* haurà de tenir la qualificació necessària per a les tasques d'impuls i consolidació del clúster. Haurà de comptar amb l'adequada formació acadèmica, experiència i habilitats en els àmbits de gestió empresarial, comunicació i lideratge.

Formació acadèmica i experiència

CVE-DOGC-A-14045045-2014

Titulació universitària amb estudis d'extensió universitària en gestió empresarial (MBA, màster, postgrau, etc.).

Domini avançat de català, castellà i anglès (també es valoraran altres idiomes).

Experiència mínima de 5 anys com a executiu/iva d'empreses, consultor/a o perfil similar de dinamització de projectes empresarials.

Coneixement, experiència i habilitats en iniciatives de clúster.

Participació en activitats/projectes internacionals.

Gestió de projectes.

Polítiques públiques.

Estratègia competitiva.

j) Tenir entre els seus socis una representació de la cadena de valor i dels agents clau del clúster al qual representa.

k) Disposar de la certificació Bronze Label que atorga l'European Secretariat for Cluster Analysis (ESCA)

-6 Valoració

Cal complir tots els requisits indicats al punt 5. D'aquests requisits, són puntuables els de les lletres h), i) i j), als quals els corresponen els valors següents:

h) Consistència i viabilitat del pla estratègic (valor: 40 punts).

i) Existència de *cluster manager* professional amb el perfil adequat (valor: 40 punts).

j) Representativitat de la cadena de valor i mapa d'agents clau que la representa (valor: 20 punts).

-7 Avaluació i càlcul

La puntuació total assolida per un projecte serà el resultat de multiplicar els valors atorgats a cadascun dels requisits puntuables, que són els que defineixen les lletres h), i) i j) del punt 6, pels corresponents valors de ponderació que van de l'1 al 5. La puntuació màxima que es podrà obtenir serà de 500 punts. Per considerar un projecte objecte d'aprovació haurà d'obtenir una puntuació mínima de 380 punts i una ponderació mínima aplicable per cada requisit com es detalla a continuació:

Consistència i viabilitat del pla estratègic: ponderació mínima de 4.

Existència de *cluster manager* professional amb el perfil adequat: ponderació mínima de 4.

Representativitat de la cadena de valor i mapa d'agents clau que la representa: ponderació mínima de 3.

-8 Obligacions dels participants

Els participants del Programa estan sotmesos a les obligacions següents:

Comunicar a ACCIÓ la variació de les dades que afectin els criteris d'avaluació previstos en aquesta Resolució.

Implantar i mantenir la marca associada al programa tal com s'estableixi al *Manual d'ús de la marca*.

Comunicar periòdicament, i en tot cas dins dels terminis establerts per ACCIÓ, les dades que se sol·licitin.

Participar en les actuacions de dinamització de clústers que s'implementin durant l'any.

Renovar cada tres anys la participació en el Programa.

Qualsevol altra que decideixi la Comissió d'Avaluació i Seguiment.

L'incompliment de qualsevol d'aquestes obligacions o d'aquelles que decideixi la Comissió d'Avaluació i Seguiment podrà ser motiu de revocació de la participació al Programa, d'acord amb el procediment establert al punt 4 d'aquesta Resolució.

-9 Convocatòries

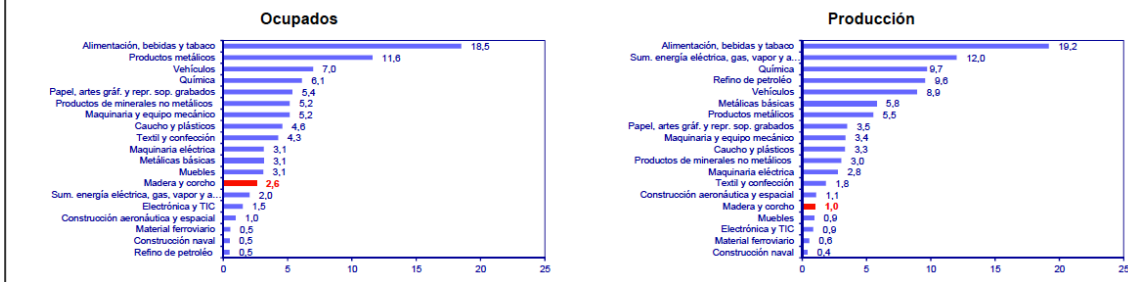
9.1 La primera convocatòria s'obrirà a partir del dia 3 de març de 2014 i restarà oberta fins al dia 3 d'abril de 2014.

9.2 La segona convocatòria s'obrirà a partir del dia 1 d'octubre de 2014 i restarà oberta fins al dia 31 de octubre de 2014.

9.3 Es poden obrir noves convocatòries mitjançant resolució durant la vigència del Programa Catalunya Clústers.

(14.045.045)

Ocupados, Producción y VAB (porcentaje respecto al total de la industria)



Evolución reciente del Índice de Producción Industrial (IPI) (tasa de variación anual suavizada)

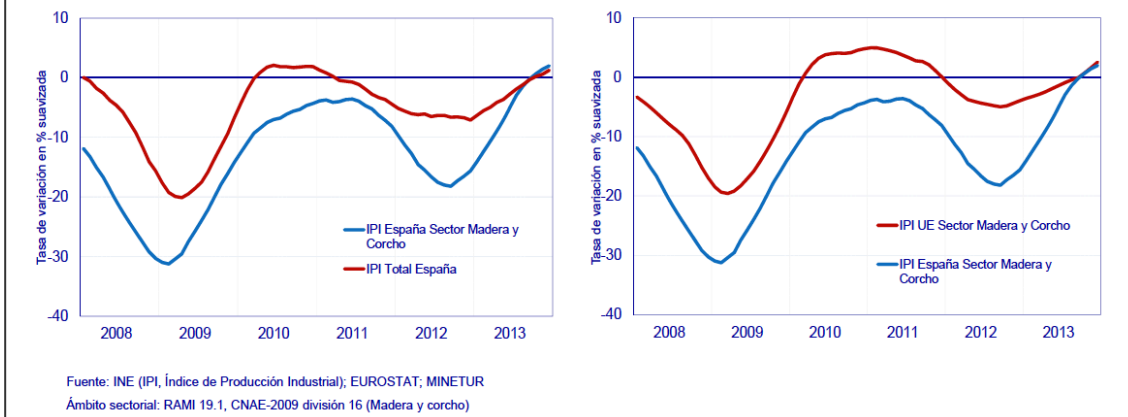


Table 1. The local production systems in Catalonia

Sectors	Establishments	Employees	Turnover (*)
Food and beverages			
Pork meat in the counties of Girona and Osona county	222	8,289	2,000
Mineral water in La Selva	11	634	400
Wine and cava in the Penedès	214	2,478	575
Olive oil in the south and Ponent	129	887	500
Textiles-clothing and hides			
Clothing in the metropolitan area of Barcelona	500	7,894	700
Wool spinning and weaving in Vallès Occidental	88	2,616	275
Cotton spinning and weaving in Central Catalonia	153	2,945	325
Recycled cotton spinning in La Garrotxa	22	738	100
Knitted fabrics in Anoia	129	2,611	225
Knitted fabrics in Maresme	196	2,231	200
Narrow fabrics in Bages	28	820	100
Leather tanning in Anoia	46	791	175
Leather tanning in Osona and Vallès Oriental	28	1,918	300
Wood, furniture and cork			
Wood industries in Osona and La Selva	227	1,228	100
Cork in the Costa Brava	83	1,130	225
Household furniture in Vallès Oriental	95	942	100
Household furniture in Montsià	36	938	100
Paper, publishing and graphic arts			
Production of paper and cardboard in the counties of Anoia, Bitlles and Llobregat	31	1,673	400
Graphic arts and publishing in the metropolitan area of Barcelona and Central Catalonia	1,025	19,208	2,250
Chemical industries			
Consumer chemicals in the metropolitan area of Barcelona	205	8,056	2,100
Raw chemicals in Camp de Tarragona	47	4,891	5,600
Pharmaceutical products in the metropolitan area of Barcelona	132	12,523	3,300
Plastic materials			
Plastic products in the metropolitan area of Barcelona	803	28,182	3,800
Metallurgy and metal products			
Metal products in the metropolitan area of Barcelona and Central Catalonia	2,680	39,018	4,250
Machinery and mechanical equipment			
Machinery for food industries in Vallès Occidental	38	500	80
Machinery for food industries in the counties of Girona and Osona county	77	939	125
Agricultural machinery in the counties of Ponent	85	615	75
Packing and packaging machinery and equipment in the metropolitan area of Barcelona	54	1,443	300
Machinery for the textile and clothing industries in Bages and Vallès Occidental	61	790	100
Handling and elevating machinery in the metropolitan area of Barcelona	139	4,400	925
Valves and taps in Baix Llobregat and Vallès Occidental	66	1,700	250
Moulds and dies in the metropolitan area of Barcelona	278	3,691	300
Electrical and electronic equipment			
Electronics in the metropolitan area of Barcelona	125	7,656	2,200
Electrical apparatus in the metropolitan area of Barcelona	133	5,222	750
Lights and lighting equipment in the metropolitan area of Barcelona	125	2,500	300
Transport materials			
Automotive industry in the industrial outskirts of Barcelona	226	35,188	9,600
Bodywork in La Selva	23	1,276	250
Motorcycles in the metropolitan area of Barcelona	37	2,500	900
Railway material in the metropolitan area of Barcelona	120	11,000	1,100
Aerospace material in the metropolitan area of Barcelona	43	750	125
Various manufacturing industries			
Articles of jewellery in Barcelonès	180	820	100
Decorative ceramics in the counties of southern Girona	67	579	60
Total sectors	9,007	234,210	45,640

(*) In millions of euros.

Source: Hernández, J. M. et al. (2005): *Map of Local Industrial Production Systems in Catalonia*.

ization of concepts, relationships, and linkages among constituencies. In the private sector, new or revitalized trade associations often take leading roles in the continuing upgrading of clusters. In government, cluster upgrading can be institutionalized by appropriately organizing government agencies, organization through the gathering and dissemination of economic statistics, and by controlling the structure and membership of business advisory groups.

Summary

A cluster is a system of interconnected firms and institutions the whole of which is greater than the sum of the parts. Clusters play an important role in competition, and these raise important implications for companies, governments, universities, and other institutions in an economy.

Clusters represent a new and complementary way of understanding an economy, organizing economic development, and setting public policy. Understanding the state of clusters in a location provides important insights into the productive potential of its economy and the constraints on its future development. Paradoxically, then, the most enduring competitive advantages in a global economy will often be local.

Microclusters in Catalonia

History

Catalonia, one of Spain's seventeen autonomous regions, accounts for 13 percent of the national population but almost 20 percent of its GDP and about 40 percent of its industrial exports. In December 1989, Antoni Subirà was appointed Catalonia's Minister of Industry, Trade and Commerce. Soon after, he obtained a manuscript copy of *The Competitive Advantage of Nations* and circu-

lated several chapters within the ministry. With Spain facing entry into the European Common Market in 1992, Subirà sought to develop a new approach to industrial policy in Catalonia. He chose clusters as a central element.

Since then, approximately twenty Catalan clusters have been studied in detail. As of 1997, clusters continued to be used in Catalonia as the main methodology for assessing the

region's industrial competitiveness and for identifying areas in which the government could improve the environment for companies.

Actors

Initially, Subirà asked Professors Eduard Ballarin and Josep Faus from IESE, a top business school based in Barcelona, to apply the cluster methodology to the study of Catalonia's industry. Their preliminary work set the stage for a larger report, prepared together with Monitor Company, a consulting firm.^a The report offered an overall diagnosis of Catalonia's strengths and weaknesses and was well received. It defined groups of clusters (for example, mass-market consumption goods) and provided some general guidelines about what was needed to enhance their competitive advantage.

Subirà decided to take this work one step further and to study discrete clusters in more detail. Already-existing capabilities within the Ministry of Industry, Trade and Commerce were reorganized, and a local consulting firm—CLUSTER Competitiveness—was asked to lead a series of cluster initiatives. Each study involved companies, suppliers, trade associations, business schools, universities, and many government departments.

Cluster Definition

Catalan clusters included wooden toys, agricultural machinery, jewelry, leather, knitting, processed

meats, publishing, consumer electronics, and furniture.^b Specific clusters were defined relatively narrowly. In furniture, for example, three separate clusters were isolated in different parts of Catalonia, each competing in different segments and facing different challenges. Estimates indicate that Catalonia has more than one hundred such narrowly defined clusters, or microclusters.

Each microcluster study included firms, suppliers, universities, and a wide range of other interested participants. Cluster boundaries and participation emerged as a result of the study process. Self-selection was the rule: All firms interested in participating were considered part of the cluster.

All clusters were viewed as equally desirable. For practical reasons, however, cluster studies were sequenced. Some clusters were initially much better organized than others. One goal of the process was to establish effective trade organizations to serve each cluster.

Process of Change

The cluster studies in Catalonia took place in three stages. In the first, the cluster's problems and opportunities were identified and the basic concepts of cluster upgrading, such as the goal of enhancing rather than suppressing competition, were laid out. At times, the study revealed a view of the cluster's problems that differed from that presented by con-

ventional wisdom. Members of the Catalan leather-tanning cluster, for example, had attributed their decline in competitiveness to the laxity of environmental regulations in LDCs.^c Research revealed, however, that the environmental regulations of their most significant rivals, the Italians, were, in fact, more stringent than those in Catalonia. As a result, Catalan leather tanners who had previously been asking for a relaxation of government environmental legislation decided to set up a joint cleaning and tanning plant and an R&D center. The cluster process convinced them that caring for the environment would actually improve their competitiveness.

The second stage of the study process involved the attempt to achieve a consensus vision of the cluster's future that would unite all participants and facilitate change. In the third stage, cluster participants created strategies and action steps for fulfilling the vision. Specific individuals were identified to lead the action initiatives.

Results

The cluster process equipped the Catalan government with the knowledge it needed to influence Spanish national policy more effectively. More importantly, however, it resulted in a new and more productive dialogue between government and business within Catalonia. Previously, broad, sector-wide organizations had sought general measures,

such as subsidies and tax cuts. The cluster process allowed businesses to assess competitive position in specific, operational terms. Companies requested more specific and pro-competitive government support, such as help in establishing research laboratories or promoting foreign trade. Participants agreed that the competitive advantage of the region's industries had clearly benefited from taking a cluster perspective.

The cluster approach helped numerous firms (many of them small and medium sized) to think more strategically about their problems. Examples of resulting initiatives included the transfer of a leather research center from the Universidad de Barcelona to a location near the leather cluster in Igualada; a series of seminars that helped textile producers make the transition from a production to a retailing focus; and a project for developing a common sub-assembly facility to serve the local Honda, Yamaha, and Derbi motorcycle factories. Some clusters initially lacked effective associations (for example, the furniture cluster in Montsia); others were part of organizations that represented a too broad constituency (for example, lathe operators); still others had ineffective associations (for example, the leather tanners' cluster in Igualada). Following the cluster effort, new and more cluster-specific associations were created and old associations were revived.

Catalan government policies shifted toward cluster upgrading: improving

the market access of clusters; facilitating foreign direct investment; introducing product certification programs; and instituting policies for upgrading technology. Based on cluster studies, for example, the government provided assistance for a cork research and applications center in Parafrugell (currently developing an international standard for cork quality). In follow-up discussions, however, some firms expressed the view that the best service provided by the government was the stimulation of dialogue among cluster participants.

In one of the major benefits of the cluster process, government officials were transformed into an informed audience for firms. The dialogue among various agencies and departments within the Catalan government also increased and coordination improved.

Catalonia's experience offers many lessons about applying cluster

methodology. First, one of the major benefits of convening a cluster is to explore common opportunities, not just discuss common problems. Second, leaders stressed the value to the cluster process of keeping a low profile; limiting publicity during the early stages helped avoid creating premature, unrealistic expectations and helped minimize formation of political and other opposition. Third, the particular leaders that emerged in a given cluster had much to do with its success in improving. Finally, the cluster initiative benefited greatly from the close and aggressive support and follow-up by Minister Subirà, who, with his business training and orientation, insulated the process from politics.

a. See *Monitor Company* (1992).

b. See *Conejos, et al.* (1997).

c. See *Rodriguez, Prats, Enright, and Ballarin* (1995).

NOTES

1. For a recent example, see Cairncross (1997).
2. See Enright (1993B) for examples illustrating clusters' varying geographic scope.
3. Enright (1993C) offers an interesting discussion of how to draw cluster boundaries.
4. While industry analysis properly involves suppliers, channels, and customers, cluster analysis widens the scope considerably to include chains or related industries at all levels, as well as a wide range of institutions.
5. The case of Italy, where such clusters are quite common, helped spawn a literature on industrial districts. Industrial districts are a special case of clusters.
6. The literature about such cases uses a number of alternate terms, such as *technopoles* and *science cities*. See A. Advani (1997) for one example.
7. See Porter (1990), Chapters 3 and 4.
8. See Harrison, Kelley, and Gant (1996) for a good summary. Static agglomeration economies consist of a local concentration of customers (or downstream firms) suffi-