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E.5 DETERMINANTS OF INNOVATION AT FIRM LEVEL

Cluster - based industrial policy in Europe. The case of agrupaciones de empresas innovadoras in Spain and distretti industriali in Italy: A comparative analysis

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Strategic innovation policies for developing a high technology cluster: Medicon Valley as case for assessment

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An overview of the clusters' policies in the North region of Portugal

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An overview of the clusters policies in the North region of Portugal

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Abstract

Clusters, understood as geographical agglomerations of small to medium-sized firms specialised in specific sectors and strongly connected, are at the top of the political agendas for their positive impacts in the regional development and in the economic competitiveness. These policies have been promoted by several entities in different territorial levels and involved both public and private entities. In the specific case of Portugal, the Technological Plan approved in 2005 and the Collective Efficiency Strategies launched in 2007 constituted the most remarkable instruments to promote the constitution of clusters in strategic sectors for the national and regional growth.

The main goal of the paper is to present and discuss about the public initiatives that are supporting the installation of some specific clusters in the North region of Portugal. The starting point of the study was the authors' participation in a European project (*AT-Clusters*) focused on the debate and exchange of experiences and good practices in the clusters policies domain. The paper gives account of the national and regional policies driven to clusters and highlights the main impacts that these policies are causing in a regional level, namely in the mobilisation of private entities and firms. The paper also analyses the stages of consolidation of the different clusters in the North region of Portugal. Finally, the paper emphasises some critical elements related to the clusterisation of some sectors, underlying the challenges that will be faced by the regional entities on which a higher or lesser success of these initiatives will depend.

Keywords: Clusters, Clusters policies, Regional development, North region of Portugal

1. Introduction

Nowadays clusters are recognised as an important instrument for promoting industrial development, innovation, competitiveness and economic growth. Although primarily driven by private companies, clusters are influenced by various actors, including governments and other public institutions at national and regional levels. On the other hand, there is a very extensive literature related to the clusters and several successful examples of clusters around the world.

Clusters can be defined as being geographical agglomerations of small to medium-sized firms specialised in one or a few related sectors, being linked by interdependencies in providing a related one. However, the clusters' definitions have become increasingly fragmented as alternative classifications have emerged, as well as different types of clusters have expanded. As a result, it is now argued that the concept of "cluster" has increasingly become a vague and ambiguous concept (Ketels, 2003). Nevertheless, the presence of clusters is seen as an important source to strengthen the regional competitiveness. There are several types of positive impacts and externalities connected to the clusters. These benefits include, for example, industrial specialisation, external division of labour, agglomeration and external economies, embedded competences and a balance between competition and cooperation - the so called "co-opetition". The access to specialised human resources and suppliers, knowledge spillovers, pressure for higher performance in head-to-head competition, and learnings from the close interaction with specialised customers and suppliers are other advantages attached to clusters.

As a result of these advantages, clusters have received widespread attention as an instrument for enabling firms to overcome internal limitations by joining efforts and resources with other firms, R&D institutions and universities and other public entities in pursuit of a common objective or vision. There is now a general interest and receptiveness to promote strategies of clusterisation industries and firms. This has particularly been fuelled by the growing appreciation of innovation in the university circles as well as in policymaking, and the perception that clustering activities may be one of the most effective means available for fostering an environment that is conducive to innovation.

In this context, the aim of the paper is to realise an overview of the current policies on clusters and clusters-based economic development in the North region of Portugal. The

starting point of the paper was the participation of the authors in a European project related to clusters (called “AT Clusters”), in which the case of the North region of Portugal was studied. In this region, the industrial sector has a notable socioeconomic importance. For instance, in 2004, 36% of the turnover of the Portuguese manufacturing firms was generated in the North region, 53% of the Portuguese population employed in manufacturing worked in the North, 43% of the national departures of the international trade were generated in the North and the region assured 28% of the Portuguese GDP (CCDRN, 2006). However, the industrial development was excessively based on traditional sectors (textile, footwear, leather, furniture, etc.), where an intensive work force and low remunerations were historically the main factors of competition and growth. Nowadays, the exposure to the exterior and the international concurrence highlight the vulnerabilities of this development and the region is facing a serious crisis characterised by the failure of several firms and by the rise of unemployment. As a result, the North region is losing economic competitiveness as the continuous fall of the regional GDP in the national context and the deviation of the regional GDP *per capita* in comparison to the national (and European) average clearly demonstrate (CCDRN, 2006).

In this context, the creation of clusters is seen as a strategic action to face several of the regional weaknesses, namely to surpass the lack of dimension of the firms, to increase the cooperation, to improve the innovation and to diversify the regional industrial base. To accomplish the described goal, the paper is organised as follows. Firstly, we revisit the national policies and efforts to promote the creation of a wide range of clusters in Portugal. Secondly, we look at the policies and strategies undertaken in a regional level. We concentrate on describing the different clusters identified with more potential to the regional development, tracking their evolution over time and evaluating their different stages of consolidation. The clusters’ goals, the kind of organisation, the partners, the sponsors, the level of articulation with R&D institutions and other main economic and technological issues will be analysed and discussed. Finally, we highlight the main debilities and threats to the creation of the structures that will support clusters in the North region of Portugal.

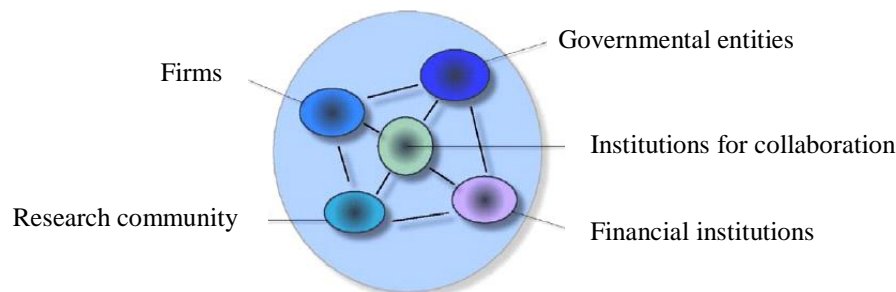
2. The clusters: brief theoretical synthesis of the concept

The concept of clusters has in recent years gained enormous popularity to the extent that policy-makers, practitioners and academics alike are increasingly referring to it. The work of Porter (1990) was one of the most influential studies that contributed to the concept development. For this author, clusters are groups of companies and institutions co-located in a specific geographic region and linked by interdependencies in providing a related group of products and/or services. Because of the proximity among them – both in terms of geography and of activities – cluster constituents enjoy the economic benefits of several types of positive specific location externalities. These externalities include, for example, access to specialised human resources and suppliers, knowledge spillovers, pressure for higher performance in head-to-head competition, and learnings from the close interaction with specialised customers and suppliers (Ketels, 2003).

Based on these ideas, the cluster concept becomes a recurrent strategy in the governmental agenda of many countries. However, if the initial focus of Porter was on a national level, during the time, the concept would become more *regionalised*, namely concerning the development of networks delimited to some specific areas (Valente *et al.*, 2008). More recently, the Porter himself (2000) admitted that the clusters could vary significantly in terms of their territorial support and could encompass so different areas such as a city, a region or even a whole country. An EU document (EU, 2008) expressed an identical notion when it was declared that the administrative boundaries of a cluster could be very changeable.

Besides the different dimensions, clusters can be distinguished for other elements, such as the type of products and services they produce, the local dynamics they are subjected to, their stage of development, and the business environment that surrounds them (Ketels, 2003). Despite these many configurations, clusters are identified by some common elements, namely the geographic proximity (of entities), the industry specialisation and the predominance of small to medium-sized firms (De Propriis & Driffield, 2005). Andersson *et al.* (2004) highlight the many benefits provided by the geographical concentration of firms and other institutions, where *hard aspects* (economies of scale, lowering transaction costs, specialisation of supply, etc.), as well as *soft aspects* related to the social capital (facilitating the informal exchange and accumulation of tacit knowledge) can be included.

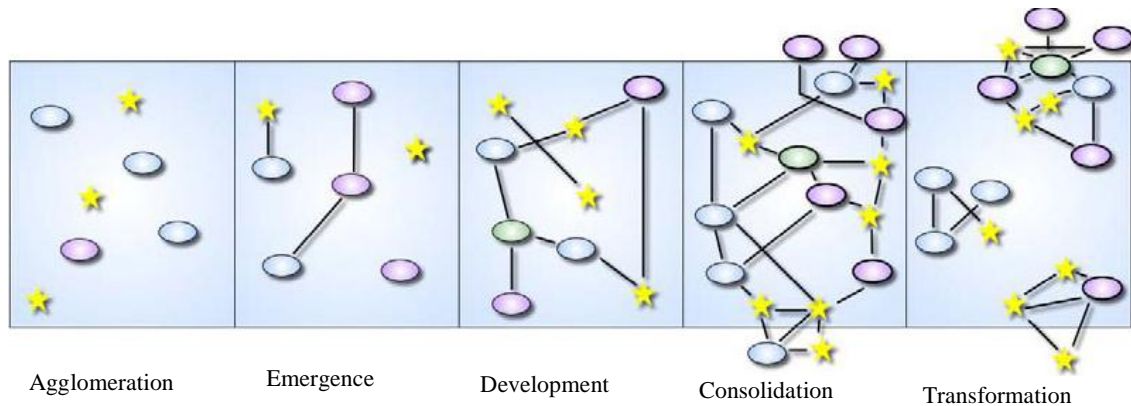
Secondly, cluster firms are characterised by a high degree of specialisation and complementarity. This generates dynamic processes of knowledge creation (learning and innovation) and knowledge transfer (diffusion and synergies). There are collective learning processes in clusters that generate innovation and thereby competitiveness also in non-high-tech intensive sectors. The specialisation reaches so high degrees that some areas become famous for the clusters installed, such as the Silicon Valley, Detroit or Tampere just to name a few. Thirdly, the concentration of small to medium-sized firms in clusters is related to the need of achieving more critical mass. Critical mass depends not only on the number of entities, but also on the inner dynamics and on the cooperation established between them. As Andersson *et al.* (2004) emphasise, critical mass may serve as a buffer and makes a cluster be resistant to exogenous shocks or other kinds of pressures. The entities represented in a cluster can include a wide range of entities (Figure 1). There are different degrees of cooperation in the clusters, which reflect the performance of each cluster. For instance, Gordon & McCann (2000) identify three basic types of clusters: (i) those that are pure agglomeration with co-location but no internal links; (ii) industrial-complexes where firms are linked by internal market relations (supplier-customer) including large-firms dominated systems; (iii) and clusters that are centred on social networks where firms are linked by more complex and long-term relationships. In other way, Enright (2001) distinguishes the *working clusters* (those with high critical mass that create agglomeration economies), the *latent clusters* (those that have critical mass, but an insufficient cooperation) and the *potential clusters* (those that have some elements needed, but where those elements must be deepened and broadened).



Source: Based in Sölvell *et al.*, 2003.

Figure 1: The main entities represented in a cluster

Another important issue is related to the temporal dimension and the evolution of a cluster. Clusters are not immutable, but they are in constant evolution (EU, 2008). In a cluster life cycle several stages of development can be identified (Figure 2), although these may not be identical, and the pace of their evolution may vary.



Source: Based in Andersson *et al.*, 2004.

Figure 2: The cluster life cycle

All the clusters pass from an evolutionary stage, from the first agglomeration tendencies to its consolidation and transformation. This evolution is caused by several reasons, namely by the technological advances and by the changes both in the markets and in the productive processes. The capacity of a cluster to evolve over time depends on its inner structure and dynamic (Andersson *et al.*, 2004). Consequently, there are clusters that become stronger and polarise the regional development, while others become stationary or decline over the time (Boschma, 2004). This means that the clusters do not always produce the expected results, depending on a wide range of factors (Markusen, 1996).

The popularity of clusters is mostly related to the economic benefits they generated. For Ketels (2003), the benefits of a cluster come in three dimensions. First, firms can operate with a higher level of efficiency, drawing in more specialised assets and suppliers with shorter reaction times than they could in isolation. Second, firms and research institutions can achieve higher levels of innovation, due to the closer interaction with customers and other institutions. And third, the level of business formation tends to be higher in clusters. Start-ups, for instance, are more reliant upon external suppliers and partners, which can be found in a cluster. Identical opinion is defended by Porter (1998)

when he refers that clusters are ameliorating the competition on three ways: (i) by increasing the productivity of the firms installed; (ii) by driving the direction and pace of innovation, which underpins the future productivity growth; (iii) and by stimulating the formation of new businesses, which expands and strengthens the cluster itself.

Nonetheless, the economic impact of clusters on competitiveness and innovation is far from being clear as many studies have demonstrated (Stamer, 2001; Malmberg & Power, 2005; Silvestre & Dalcol, 2006). Some authors, such as Malmberg & Power (2005) highlight that: (i) there is frequently an imbalance between the theoretical benefits attributed to clusters and the practical impacts observed; (ii) the lack of articulation and the competition among entities were the most common problems that restrict their success.

3. An overview of the clusters policies in Portugal

Like in other European countries, in Portugal the policies that aim at creating clusters are receiving a special attention by public entities. However, it should be noted that these initiatives are quite recent and have been mostly supported by specific plans undertaken in the last five years. For instance, in 2003 a work report of the European Commission stated that Portugal was one of the 15 EU members where no explicit strategy to support clusters was put into practice. Nonetheless, the creation of clusters in Portugal was a goal already materialised in some older public strategies, but had little practical impacts.

In fact and according to the UCPT (2005), clusters emerged on the political and economic agenda during the 1990s in the sequence of Porter's recommendations study (Porter, 1994). The main goal of this study was to identify the sectors in which Portugal had competitive advantages and the recognition of the changes need to mitigate the national debilities and to strengthen the potentialities. Porter's study focused on four main factors to analyse the Portuguese competitiveness and comprised: (i) the fundamental conditions (skills, technologies and related infrastructure and human and financial resources); (ii) the demand conditions; (iii) the related and supported industries; (iv) and the industrial strategies, structures and competition. The study concluded that Portugal had some areas that could be integrated into clusters (textile, forest, furniture) and that some sectors were already geographically concentrated (cork, shoes, stones). However, these sectors didn't

work as clusters due to the lack of coordination between firms and mainly between them and I&D institutions. The study generated a public awareness concerning clusters and some working groups were created to promote their constitution, but these efforts have had little practice impact.

Only in 2001 a new impetus was given to the clusters promotion, through PROINOV initiative, within which several *mega clusters*, such as food, housing or fashion were identified. According to the UCPT (2005), the mega cluster concept included several distinct activities belonging to specific sectors, whose goods or services responded to the needs of larger markets, taking advantage of the complementary skills and the networking favoured by the clusters. The food mega cluster was an example of the clusters identified in that time, incorporating several correlated sectors (dairy, meat, wine, beer, water, etc.). The political instability that occurred in Portugal in the beginning of the decade has caused changes in the initial purposes of the clusters promotions. The PROINOV was replaced by the UMIC (Knowledge and Innovation Unit Mission) whose focus was more concentrated in developing the information society (Valente *et al.*, 2008). As a result, the promotion of clusters was again delayed in Portugal.

The most vigorous and productive pack of initiatives were launched by the last Portuguese Government (2004-2009). In fact, this Government carried out a wide range of plans in order to cluster existing and strategic activities and sectors and to support the consolidation of new ones. The Technological Plan (TP) is one of those initiatives. Approved in 2005, the TP contains a lot of detailed orientations related to the cluster policies and measures. The TP constitutes a political agenda whose purpose is to reinforce the economic competitiveness based on knowledge, technology and innovation investments. One of the most relevant policies advanced by the TP is the Programme for *Competitiveness and Technology Centres* (CTC) that is supported by the NSRF (National Strategic Reference Framework), which constitutes the framing for the application of the Community's policy for economic and social cohesion in Portugal from 2007 to 2013. The main goal of this Programme (*cooperate to better compete*) intends to reinforce the Portuguese economy through the creation of several clusters linked in networks and joined to the international networks according to three steps: (i) the creation of competitive centres in strategic sectors, promoting the cooperation between regional actors; (ii) the

establishment of a national network of competitive centres to exploit complementarities and common benefits at a national scale; (iii) and the clusters connection to the international networks to enlarge the economic cooperation and exchanges. To achieve this purpose, the Programme predicts the creation of two different typologies of clusters: the CTC (cluster that will have an international dimension and potential to compete with the best positioned in the world); and the regional clusters, based on the proximity relations as the key for the regional development.

Another complementary initiative promoted by the last Government is the Collective Efficiency Strategies (CES) in accordance to the Decree-Law n.º287/2007, 18th August. The CES are a consistent and strategically justified set of initiatives that are integrated into an Action Programme. The initiatives aim at innovating, qualifying and modernising a number of firms which work at national, regional or local levels. The aim of the initiative is to promote a co-operation and networking between firms and between them and other institutions. The CES are composed by *anchor projects* and by *complementary projects*. The first ones are labelled as essential to materialise the Programme strategies and actions, while the second ones incorporate projects that in articulation with the anchor projects, contribute to reach the goals intended. The CES comprise two main typologies that include the promotion of clusters and strategies for the region based economic growth. The first typology aims specifically at promoting CTC and creating *other clusters*.

The CTC are described as instruments to encourage the set-up of innovation networks and to generate integrated partnerships between firms and relevant support institutions, namely R&D, higher education and vocational training institutions. The CES that produce a strategy and the corresponding Action Programme may be recognised as *other clusters*. The *other clusters* typology should be taken up by firms and other support organisations that share an economic vision for a region or for interrelated sectors because in these cases the innovation process is frequently improved by the reinforcement of proximity relations.

The first call for proposals to the creation of CTC and *other clusters* took place in 2008 and the first contracts were signed in 2009. In accordance to the POFC (2009), the CES Programme had received 30 proposals, being 12 of them inserted in the CTC typology and the remaining in the *other clusters* category. The proposals mobilised a significant

number of public and mainly private entities. For instance, from the 820 entities participant in the CTC proposals, 61% of them were private firms. This way, the public policies had the merit of attracting and mobilising a relevant number of entities around.

From the 30 initial proposals 19 projects were selected: 11 of them in the CTC typology and 8 in the *other clusters* category. Almost a half (9) of the selected projects was submitted by entities of the North region of Portugal. Thus, we can conclude that these public initiatives drew in particular the attention of North region entities.

4. Cluster policies initiatives in the North region of Portugal

The wide range of difficulties that the North region of Portugal (Figure 3) is facing in the course of the last years, namely the problems related to the loss of economic competitiveness, are in the origin of several plans that intend to put back the region in a path of socioeconomic growth. The constitution of clusters appears as a recurrent strategy in many plans as the right way to modernise the industrial tissue strongly implanted in the region and to surpass many weaknesses as the lack of international dimension of firms and the deficient articulation between them.

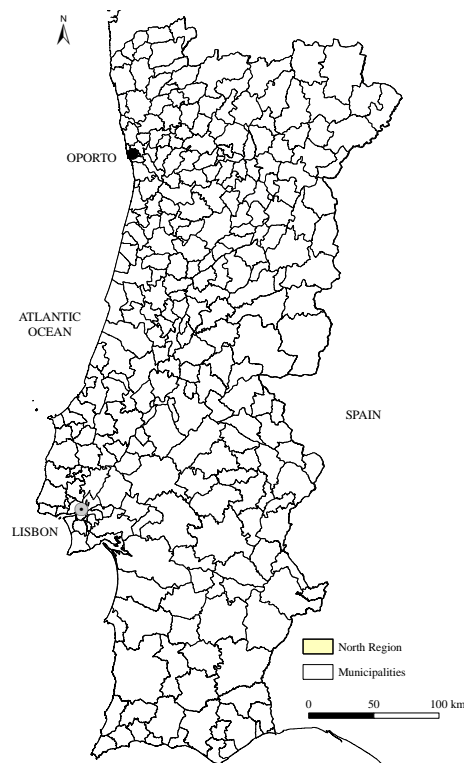


Figure 3: The North region of Portugal

North2015 is one of these plans. North2015 is a diagnosis and strategic document for the regional development elaborated by experts in articulation with the most representative entities of the region, namely with the North Regional Coordination and Development Commission (CCDRN in Portuguese) that manages and supports the technical coordination and the implementation of the central policies across the region. North2015 foresees the future envisioned by the region and anticipates the ways to reach the goals intended. Furthermore, North2015 constitutes a guide document to frame the strategies of other instruments and plans, namely the North Regional Operational Programme 2007-2013. Briefly, North2015 aims at approaching the regional growth to the EU average and the improvement of the regional socioeconomic sustainability. In the entrepreneurship domain, North2015 underlines the existence of potential and resources (firms, I&D centres, human resources, etc.) and suggests the technological intensification of firms and the creation of clusters in some important sectors for the regional development (health and creative industries for instance).

The North Regional Operational Programme (2007-2013) also known as *ON.2, The New North*, is a financial instrument which supports the North regional development. The ON.2 is entirely financed by the European Regional Development Fund and incorporates the most significant financial allocation for the Portuguese Regional Operational Programmes, with 2.7 thousand million Euros, which represent 12.5% of the NSRF budget. Thus, the ON.2 can be considered as a key strategic contribution to promote the socioeconomic growth in the North region and to put several strategies identified in the North 2015 study into practice. The Programme is composed by five strategic priorities, being one of them (*Competitiveness, Innovation and Knowledge*) specifically focused on the clusters' creation. This agenda supports the creation and consolidation of emerging clusters and technology-based firms in sectors that promote interfacing with regional science and technology skills and capacities. Hence, the priority agenda provides financial support to the consolidation of clusters in representative sectors of the region and supports the creation of new ones based on emergent activities. The objective is to establish networks between firms and other institutions to generate scale effects and agglomeration

economies. The ON.2 classifies the creation of clusters as an essential strategy to strengthen the regional economic basis.

Moreover, the regional entities and in particular the CCDRN organised several initiatives to promote clusters and the financial supports provided to their constitution. The realisation of seminars, conferences, workshops and other public initiatives are some examples of these procedures. Also some sub-regional entities, such as regional development agencies and municipal associations, developed identical actions.

All these public efforts produced effects. In the Portuguese context, the North region was the one which submitted more proposals (19) to the CES Programme (whose funds are provided by the O.N2) and which obtained more winner projects (9). From the selected projects, 5 of them are included in the CTC typology (health, fashion, agro-food, automobile and productive technologies) while 4 are inserted in the *other clusters* typology (creative industries, wine, furniture and sea). Despite these clusters, there are other sectors identified as non priority by the public entities where the entities are collaborating closer in order to raise their critical mass. This movement can be the seed of future clusters (renewable energies and information and communication technologies). In the next Section, the main characteristics of the ongoing regional clusters are analysed and discussed.

5. Characteristics and the stage of consolidation of the clusters in the North region

5.1. Methodology of the study

As it can be easily concluded by the previous Sections, the clusters policies in Portugal and in the North region are very recent and in an initial stage of consolidation. As mentioned before, the realisation of the study resulted from the authors' participation in the AT-Clusters European Project, which aims at exchanging experiences in the domain of the clusters policies in five countries: Portugal, Spain, France, Ireland and the UK. In the case of Portugal, the region involved is the North region of Portugal (Figure 3) and the sponsor entity is ADRAVE (Ave Valley Regional Development Agency).

The project, which is in course, is composed by several stages. The first one consisted of realising an overview of the policies undertaken by the public entities, the stage of development of the policies and the quantitative and qualitative impacts of these measures. The main findings obtained by the several AT-Clusters partners were presented

and discussed in a workshop that took place in Santander (Spain). The information carried out in the next subsections is a synthesis of the work developed in this first stage.

The starting point of the work was a survey addressed to all partners, which provided a set of questions about the policies and the nature of clusters in each region. To gather the data required different techniques were used. The most important source of information were the meetings that took place with elements responsible for the regional development, namely from the CCDRN and ADRAVE and with the entities involved in the clusters constitution. These meetings were important to obtain and update information as well as to get data about the difficulties felt by the entities, to identify the partners involved, the level of articulation between them, etc. The participation in workshops scheduled by some regional entities also provided data related to the clustering process in the different sectors.

The problems experienced during this stage of the work were related to the difficulty of obtaining the desirable data due to the incipient state of most clusters in the region and to the recent and unavailable character of the information.

5.2. Brief characterisation of the regional clusters

5.2.1. The agro-food cluster

As mentioned before, the agro-food cluster was one of the projects selected by the EEC Programme and corresponds to one of the priority sectors identified in several documents of regional development. The starting point of the cluster, currently designated by *Portugal Foods*, was the study of Afonso *et al.* (2008). This study demonstrated that an agro-food cluster has the potential and conditions to be successfully installed in the North region of Portugal and it highlighted that clustering activities can be the right way to surpass many debilities faced by the individual entrepreneurs. The main efforts to install the cluster in the North region were developed by the INTEGRALAR association, which comprises more than 50 partners of the agro-food sector (firms, R&D centres, associations, etc.).

The cluster aims at overcoming several weaknesses diagnosed in the agro-food sector. In the North region of Portugal there is a high concentration of agro-food firms but the sector is sustained in SMEs, with a strong territorial diffusion, some of them

technologically undeveloped and employing an unqualified work force. Other challenges faced by the sector are related to the growing competition of the international markets and to the loss of trust between consumers and the agro-food industry. The agro-food cluster aims at surpassing the specific debilities of the regional sector by strengthening the cooperation between the entities (firms and I&D centres) that operate and by exploiting the resources and the know-how in order to reinforce the international competitiveness of the sector. More specifically, the agro-food cluster aims at:

- taking advantage of the potential installed in the firms;
- providing a greater scientific technological support to the various entities of the sector;
- establishing a higher articulation between the different partners of the sector;
- creating networks of cooperation between firms and I&D centres;
- modernising and making the sector more competitive in the international markets, basing the growth on the quality and on the differentiation;
- working as an observatory to supervise continuously the various subsectors.

The coordination centre of the cluster is located in the Science & Technology Park of Maia city. It should be emphasised that despite the location of the cluster in the North region, it integrates several entities of other Portuguese regions.

5.2.2. The creative industries cluster

As stated above, this sector was also indicated by the regional entities, namely by the CCDRN, as a sector where the activities could be clustered. The constitution of the cluster results from a common initiative undertaken by Serralves Foundation in partnership with the Oporto Metropolitan Municipalities Association, the Oporto House of Music and the Society for Oporto Downtown Urban Revitalisation. These entities promoted a study to provide a vision for the regional creative industries' sector: "*The development of a creative industries cluster in the Northern region*" (FS, 2009). This study was the starting point to consolidate the proposal to develop a creative industries sector in the North region.

The cluster is settled in the Oporto city and has more than 60 partners predominantly located in the North region of Portugal. The creative industries integrate a wide range of activities (advertising, architecture, art and antique markets, crafts, design, fashion, film and video, music, performing arts, publishing, etc.). The cluster is anchored at

the potential installed in the Oporto city and in the surrounding cities. In fact, the Oporto city concentrates several creative resources in terms of firms, institutions, equipments, events organisation and even in terms of cultural entertainment. The cities of Braga and Guimarães are also representative, particularly the last one where ambitious creative projects are in course, such as *Guimarães European Capital of Culture 2012*.

However, in the North region the sector is facing several weaknesses, namely the followings:

- the creative industries sector is dominated by micro and SMEs with reduced capacity of internationalisation;
- the sector faces inhibiting barriers: underdeveloped networks, incipient channels, etc.
- there is a generalised symptom of isolation and it is urgent to reinforce network contacts, supports, productions, and distribution (the corporate activity is very reduced);
- considering the current dimension of its critical mass, the sector witnesses a loss of qualified and talented human resources.

Thus, the sector has a wide range of weaknesses that reduces its competitive position and makes its contribution to the regional development lesser than its true potential. The cluster intends to reverse this state of things and aims at the North region becoming the most creative Portuguese region through the conception and the implementation of an appropriate pattern of governance which facilitates the creative entrepreneurship, the growth of the creative sector and attractive centres, strengthening the creative potential installed in the region (FS, 2009). The creation of the cluster aims at reinforcing the critical mass of the region's creative capital, being this goal underpinned in three main strategies:

- ameliorate the creative capability and entrepreneurship, using creativity as a catalyst;
- develop the creative businesses, a set of policies intend the exploitation of the potential of creative businesses, including: specialised investment funds, intellectual property policies, clustering and marketing initiatives.
- reinforce the attractiveness of creative sites, through policies that aim at creating infrastructural conditions for the sector's growth through positioning culture and creativity as essential tools for the regional development.

5.2.3. The fashion cluster

Strengthening the cooperation among the different entities that operate in the fashion cluster in Portugal is a wish with, at least, 20 years. In 2008 some important steps have been undertaken to materialise this aspiration. The creation of the Fashion Competitive Centre Association (FCCA) was the initial step to create a fashion cluster in the North region. The FCCA aggregated the most representative associations that operate in the fashion market, namely the ATP (the Textile and Clothing Association of Portugal) and other associations, I&D centres and firms.

The cluster aggregates a set of correlated subsectors (textiles, clothing, leather and jewellery) that are very important for the Portuguese economy. Together these sub-sectors are those that more contribute to the Portuguese trade balance, representing 20% of the changing sector exports. Additionally, these subsectors employ more than 200.000 people.

The fashion cluster is also settled in the Oporto city. This location is justified by the enormous importance that the fashion subsectors have in some territories around the Oporto city, namely in Ave and Cávado (north) and in Entre Douro e Vouga (south). The industrial tissue in the region is mainly characterised by SMEs, rather diffuse throughout the territory and with more difficulties to compete in the international markets. The pattern that led to the growth of business from the 1980s, which was based on labour-intensive, low skill and low pay characteristics, is extinguished, due to competition from markets, where production costs are smaller, that has led to the relocation and closure of many firms. The fashion cluster aims at shifting this paradigm through the reorganisation of the productive basis and supporting the quality, the innovation as differentiators' factors and taking advantage of the know-how. The acquisition of scale effects by reinforcing the network between the various actors is another goal intended to surpass the reduced dimension and the lack of critical mass of the industrial tissue. The reinforcement of the cooperation, namely between the firms and the technological centres is seen as an important source to innovate and qualify the regional production. The sector modernisation and the cooperation among the players will be essential to achieve another goal which is the consolidation of the Portuguese brand in the international markets.

The constitution of networks has been one of the major initiatives of this ongoing cluster. Horizontal relations have been performed with the reinforcement of the cooperation

among several entrepreneurs, R&D institutions and associations of the fashion sectors and of other correlated sectors (creative industries, productive technologies, etc.). The relations established with these entities aim at qualifying and intensifying the innovative processes in the fashion sectors as a way to surpass the international concurrence promoted by countries where competitiveness is based on low cost products, as well as to exchange experiences among the firms that operate in the sector. At an international level, the fashion cluster is developing the first initiatives to strengthen their position and articulation in some external entities. The EUROCLUSTEX project is an example of these efforts. It is a cross border project (North region of Portugal and Galicia) that seeks to approach the two regions and to strengthen the cooperation between their fashion entities.

5.2.4. The health cluster

The installation of a health cluster in the North regional of Portugal appeared repeatedly in various strategic documents of the regional development. The first consistent initiatives to create the cluster were undertaken in 2006, when the designated founders group led by the CCDRN, performed some public actions to attract more partners. These initiatives mobilised a high number of entities between 2007 and 2008 and the health cluster was formally constituted on April 2008 as a private and non profit association, under the designation of *Health Cluster Portugal*. Since then, several other entities have joined the cluster, which has presently more than 100 partners.

The location of the cluster coordination centre in Maia city is justified for the high concentration of entities in the North region linked to the health sector, namely universities, health high schools, R&D centres and firms (some of international dimension, as Bial). The health cluster aims at being a strategic player in the national and in the international market in the development, research, production and commerce of services and products related to the health sector. Its main objective is *the promotion and implementation of initiatives and activities leading to the creation of a national cluster for competitiveness, innovation and technology, with an international outlook and, as such, taking into account high standards of quality and professionalism, to promote and foster cooperation between companies, organisations, universities and public entities, with a view to increase business volume, exports and qualified employment, in the economic areas related to health and to the*

improvement of health care (www.healthportugal.com). More specifically, the health cluster intends to:

- increase the business volume, exports and qualified employment of health-related economic activities;
- set up a national cluster, with an international outlook, anchored at the existing competences and potential, with a particular emphasis on turning knowledge into value and having the global market as a target;
- contribute to the overall improvement of health care;
- promote the socioeconomic growth in the North region and in the remaining country.

To achieve the mentioned goals, the cluster has been focusing its attention on the consolidation and enlargement of the networks with I&D entities. In this context, the cluster is extending the cooperation with international entities with the aim at sharing experiences and good practices, attracting qualified resources to the cluster and conquering new markets.

5.2.5. Other clusters

Besides the four clusters mentioned above that were studied in more detail in the AT Clusters project, there are five more clusters that were selected by the CES Programme. These clusters include the following: automobile and mobility technology cluster, the productive technologies cluster, the wine cluster, the furniture cluster and the sea cluster.

The goal of the first one is to establish a network among the different actors and events related to the automobile and mobility sectors. This cluster involves a wide range of Portuguese and international firms (suppliers and factories), entrepreneurial associations, I&D centres and other institutions of support. The cluster is managed by the CEIIA (Centre for Excellence and Innovation in the Automotive Industry) which had large experience as an associative entity.

The productive technologies cluster constitutes a case that was not originally identified as priority for the regional development, but was materialised due to the initiative of some entities, namely the *Manufuture Portugal*. The institution that is managing the cluster is the PRODUTECH (Association for Sustainable Manufacturing Technologies) which associates several partners that produce and use production technologies. The cluster

intends to structurally improve the emergence of agglomeration economies through network cooperation and operation between these companies, as well as other actors that are relevant to the development of the sectors they are part of, namely entities within the national scientific and technological system and other entities from the main sectors using these technologies.

The wine cluster is located in the Douro region and is managed by the ADVID (Douro Viticulture Development Association). The cluster aims at modernising the viticulture in this traditional region through various operational actions, such as: the I&D intensification in the firms, the development of processes to improve the efficiency of wine production, the raise of the technical and economic competences of the sector and the internationalisation of the Douro firms. The cluster is underpinned in a large and diversified entrepreneurial basis and has been supported by other I&D institutions that assure the accomplishment of the mentioned goals.

The sea cluster aims at enhancing the resources provided by the sea by developing a set of activities and services that will promote the modernisation of the traditional activities, the appearance of new economic activities and the internationalisation of the sector. The sea cluster also advances some specific goals that include the scientific and the technological intensification of the firms and of the remaining activities that operate in the sector, the reinforcement of the cooperation among these entities and the entrepreneurial encouragement. The Oceano XXI is the institution that manages the sea cluster.

At last, the main reasons that originated the constitution of the furniture cluster were: the need of expanding the sector internationalisation, the productivity improvement, the innovative intensification in the firms and the reinforcement of the inter-institutional cooperation. Thus, the cluster aims at strengthening the competitiveness of the Portuguese furniture firms, being the innovation, the design and the quality the main drives of change. The cluster is located in Paredes, a municipality with strong implantation of furniture industries.

6. Further approaches and conclusions

The clusters' development has been stimulated by the economic benefits that they produced. In fact, historical research suggests that economies tend to develop through the

emergence of regional clusters (Enright (2001). The increasing interest in clusters is an aspect of a broader re-orientation of research and economic policy towards the microeconomic foundations of prosperity and growth. At the same time, the entrepreneurial benefits linked to clusters have been transposed to the regional development. In fact, cluster policies have almost become synonymous of regional development policies. For instance De Propriis & Driffield, (2005) state that almost all Regional Development Agencies in England specifically target clusters for the delivery of their regional strategies. In the European case, as Mitsui (2003) emphasises, a large number of policy initiatives were launched and implemented in Europe aiming at fostering existing clusters or creating favourable conditions for the formation of new ones. In fact, almost all EU Member States have now cluster-specific measures or cluster programmes developed at a national and/or regional level, suggesting that they are a key element of national and regional strategies in supporting innovation (EU, 2008). This notion is also expressed by Minello (2009) when he argues that the cluster policies have occupied a central position in the agenda of the EU Commission. Some entities were created to accomplish the cluster policies in the EU Members States. The European Cluster Alliance, integrated in the PRO INNO Europe initiative, is an example of these entities, which aims at supporting and materialising the cluster policies in the different countries. The European Cluster Policy Group is another example whose role is to make recommendations on how to better design cluster policies in the Community, to assess international trends in cluster development and identify future challenges for cluster policies in response to globalisation. The importance given to clusters is so much that the European Cluster Observatory (www.clusterobservatory.eu) has been created to disseminate several data related to clusters in the EU.

In the EU context, Portugal is no exception. In the last five years the most decisive initiatives were undertaken by the Portuguese Government in order to cluster a lot of sectors considered as strategic for the national growth. The policies are providing funds to involve several key players and to install clusters. As mentioned, 19 clusters are already in development. The goal of these initiatives is to give a new impetus to the competitiveness of Portuguese firms and launch a new productive and organisational model based on innovation, knowledge and inter-institutional cooperation. These benefits are expected to be extended to the regional development.

In the specific case of the North region of Portugal, the initiatives are producing promising results. In fact, a very ambitious and unprecedented process to cluster several key activities to the regional development is in progress. Almost a half of the approved projects were submitted by entities settled in the North region. Thus, this region will be the main lab where the clusters' requirements and the reorganisation of the businesses sectors will be tested and where their impacts will be more observable. The expectations of the various projects are large and there are already some promising aspects. Firstly, cluster policies have mobilised a significant number of entities within a relatively short time. Besides the funds provided by policies, the need of changing is perceived by the most relevant entities and there is an increasing awareness to strengthen the cooperation. Secondly, the ongoing clusters are focused on key sectors for the regional economy and may provide an opportunity both to modernise traditional sectors (textiles, footwear, furniture) and to develop high tech activities (technology production and automotive).

However, these ongoing clusters will face several challenges and their future success will depend on various factors. The cluster concept, as mentioned before, is closely related to the geographic agglomeration (of firms and other institutions) in a specific area. In the case of the North region of Portugal, the agglomeration is a very broad reality, because the entities are diffused by the region (and even by other regions) and can penalise the clusters functionality. It is clear that with the improvements made over the past years in terms of transport and informational technologies, the geographical proximity is losing importance. However, the physical distance between the entities can diminish the desired levels of cooperation, requiring therefore an additional effort of articulation between them. A second problem can be the lack of tradition in these forms of cooperation between entrepreneurs and other institutions, which is a nuclear factor to the clusters consolidation and their future success. At this level, the main difficulties are related to the lack of routines in working together, in sharing knowledge and experiences and in breaking rivalries and individual interests. The strong diversity and heterogeneity of the regional productive system can hamper even more the establishment of a coherent and cooperative organisation. In particular, the definition of appropriate models of leadership and governance will be crucial to manage clusters in a balanced and prospective way.

In relation to the regional development and with few exceptions (wine and furniture), policies are narrowing the concentration of clusters around the Oporto city. The concentration of several resources in this area, namely firms and I&D institutions, seems to be the main reason for this location. However, this option ignores the potential installed in the various sub-regions, namely in Ave and Cávado, contradicting the assumptions of regional balances. In this case, having a more equitable regional distribution of the clusters' coordination centres in terms of regional solidarity and involving more actively the entities located in these areas was desirable.

In conclusion, the ongoing clusters in the North region of Portugal represent an opportunity for a change needed and reclaimed by the public entities and more and more perceived by the private ones. At the same time, their materialisation involves a wide range of challenges, which will test the capabilities of the industrial and institutional tissue. The answer to these challenges will largely depend on how the networks of cooperation between the clusters entities will be performed and operated. At this initial stage, the policies and the support given by the public entities are crucial. In fact, more important than encouraging the emergence of a large number of clusters, will be the consolidation of the existing ones. This conception is aligned with the most recent European guidelines that are focused on the revision of the policies and the goals intended to the clusters (Minello, 2009). Otherwise, the cluster policies can fall in another stereotype idea of economic and regional development, with very limited practical impacts. We should wait for further developments to analyse in more detail the results obtained with these initiatives.

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