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RESILIENT TERRITORIES: INNOVATION AND CREATIVITY FOR NEW MODES OF REGIONAL DEVELOPMENT

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RESILIENT TERRITORIES: INNOVATION AND CREATIVITY FOR NEW MODES OF REGIONAL DEVELOPMENT

In a context of economic turbulence, resilient territories gained relevance for academics, planners and decision makers. Resilience can be understood as a non-equilibrium characteristic that facilitates a socio-economic system to recover from a negative impact by re-entering a former trajectory or by adapting a new trajectory that successfully deals with the external pressures. Resilience is also connected but not fully integrated in literature with more stabilized notions, such as innovation and creativity. The International Workshop in "Resilient territories" invites senior and early stage researchers, but also practioners, working in these topics, to debate the research and policy-making agenda, in a transdisciplinary perspective, for this particular field of innovation studies and regional science.

Economic Turbulence and Resilience: Europe is in a delicate situation. Contrasts of growing competitiveness and the lack of capacity to answer challenges from the recent economic turbulence in particular regions and countries created a sense of urgency to act on member-states cohesion. One justification for this diversity within European Union regard the capacity to adapt to external shocks, to resist from negative impacts or to evolve to new socio-technical regimes, characteristics being studied in the last years by regional scientists to understand the set of dynamic conditions that create a more or less resilient territory. Resilience was thus a notion that was adapted from the study of ecological systems and other fields to the understanding of geographically embedded socio-economic systems. Resilience is often a characteristic connected to a threshold of socio-economic variety and specialization that facilitates a smooth adaptation for challenges. With the recent crisis, some regions have been dealing with this concept trying to guarantee by planning the adequate conditions for resilience.

Innovation: Innovation was a central European Union's policy flagship that was also very influential in the last decades in science and technology studies. In particular, Innovation systems have been used as a framework to develop and implement policies in transnational, national, regional, local, and even sectoral contexts. An innovation system focuses a specific area or sector, where a group of actors is interconnected with the goal to innovate. The core of the system has the main function of innovation but has also a broader contribution for the growth and development. In this way, when analysing the innovation system it is important to understand actors and linkages that are directly connected to science, technology and innovation infrastructure but also the institutional architecture and a vast group of building blocks that are in the centre of the socio-economic profile of the region or state, providing the range of possibilities for adaptation and evolution.

Creativity: Contributions on the role of creativity in regional development have increased since 2002 Richard Florida's best-selling book 'The Rise of the Creative Class' gained media and city planners attention. The 'creative class thesis' argues that the basis for territorial advantage is talent, and to enhance economic growth, places should develop, attract and retain creative people who can stimulate knowledge, technology and innovation, and thus, resilience. Creative people can be defined as a new emerging collective, the creative class. Fundamental to talent attraction and retention is the place quality, combining factors such as openness, diversity, street culture and environmental quality. Creative class members prefer places that are tolerant, diverse and open to new ideas. The place provides an eco-system in which diverse forms of creativity can root and flourish. The existence of culture and leisure that support particular lifestyles provides incentives for the location of people who like this quotidian. These factors, more or less intangible, structure institutions and an environment of 'cosmopolitanism' that influences the locational decision of talent.

Topics

1. Theoretical contributions towards the integration of resilience, innovation, creativity and/or other relevant regional science branches
2. Empirical studies focusing the conditions for resilient territories
3. Smart specialization connections with creativity and innovation
4. Impacts of talent and human capital in regional development
5. Articulation of related variety and resilience
6. Different forms of cosmopolitanism in innovation, creativity and resilience
7. Clustering dynamics, and resilience
8. Maritime economy and niches of excellence
9. Comparative studies on institutional factors that shape resilience
10. RIS3 instruments focused in innovation and creativity

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11. Policies implemented in resilient territories
12. Expected contributions of the conference

The conference intends to contribute for the definition and advancing of the scientific agenda in the topics of resilience, innovation and regional creativity. The stabilization of this agenda and the informed discussion about different conceptualizations is crucial for the alignment and engagement of the scientific community in the study of these crucial topics. The conference is also focused in informing policy and decision-makers, in different levels of action, about the advancements of conceptualization in these domains. This may have relevant impacts in the process of planning, designing new policy measures and instruments, specifically for the implementation of Research and Innovation Strategies for Smart Specialisation (RIS 3), that can help the construction of more resilient territories in Europe.
This workshop also integrates a focus group discussion about "Human Capital and Related Variety in the Maritime Economy" developed by HARVEST Atlantic – Harnessing all resources valuable to economies of seaside territories on the Atlantic, project co-financed by the European cooperation program INTERREG Atlantic Area, through the European Regional Development Fund (ERDF).

Scientific committee: António Matias (CIEO, UAlg); Artur Rosa Pires (UAveiro); Efigénio Rebelo (CIEO, UAlg); Helena Almeida (CIEO, UAlg); Hugo Pinto (CES, UCoimbra and UAlg); João Filipe Marques (CIEO, UAlg); João Guerreiro (CIEO, UAlg); Mario Davide Parrilli (Orkestra-Basque Institute of Competitiveness); Marisa Cesário (CIEO, UAlg); Mirian Tavares (CIAC, UAlg); Teresa Noronha (CIEO, UAlg); Pedro Costa (DINAMIA-CET, ISCTE-IUL); Pedro Pintassilgo (CIEO, UAlg); Philip Cooke (Oxford Institute for Sustainable Development & CASS, Cardiff University); Regina Salvador (FCSH-UNL); Roberta Comunian (King's College London); Ron Boschma (Utrecht University, The Netherlands; CIRCLE, Lund University, Sweden); Sílvia Fernandes (CIEO, UAlg); Tomaz Dentinho (UAçores);

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Organization:

APDR Associação Portuguesa para o Desenvolvimento Regional

CIEO Research Centre for Spatial and Organizational Dynamics

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FCT Fundação para a Ciência e a Tecnologia Ministério da Educação e Ciência

RSAI

ersa European Regional Science Association

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Innovation Networks – Redes de Innovación – Réseaux d'Innovation – Redes de Inovação

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PLENARY SESSIONS

REGIONAL RESILIENCE FROM AN EVOLUTIONARY PERSPECTIVE

Prof. Dr. Ron Boschma

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ABSTRACT: This paper proposes an evolutionary perspective on regional resilience. We conceptualize regional resilience not just as the ability of a region to accommodate shocks, but we extend it to the long-term ability of regions to develop new growth paths. We propose a comprehensive view on regional resilience, in which industrial, network and institutional dimensions of resilience come together and are combined. We propose a conceptualization of regional resilience in which history is key to understand how regions develop new growth paths, and we explore how regions may overcome the trade-off between adaptation and adaptability.

Keywords: regional resilience, evolutionary economic geography, network dynamics, regional branching, institutional change.

The concept of regional resilience has drawn a lot of attention in the context of the current economic crisis. This has brought about more clarity on the definition and meaning of resilience but no consensus. In economic geography, there is a tendency to refute the engineering, equilibrium concept of resilience, in which resilience is regarded as a response to external disturbances and a move back to a steady state. Scholars have advocated an evolutionary approach to regional resilience in which the focus is on the long-term capacity of regions to reconfigure their socio-economic structure (e.g. Christopherson et al., 2010; Simmie and Martin 2010; Cooke et al., 2011). Martin (2012) argues that questions about the long-term adaptive capacity of regions are still 'largely unresearched areas' though (p. 11). As such, an evolutionary perspective on regional resilience is still work in progress.

This paper makes an attempt to develop an evolutionary concept of regional resilience that focuses on the capacity of regions to reconfigure its structure, as embodied in a set of organizations, industries, networks and institutions, to secure long-term development. We deal with the resilience concept not only as a short-term shock-absorber which prevents the region to fall deep. We explicitly focus on structural change and long-term economic renewal, as this is the way for regions to compensate for inevitable processes of economic decline. Doing so, we leave behind an equilibrium concept of resilience, in which resilience is simply regarded as a response to shocks and a move back to a steady state.

We take as point of departure the notions of adaptation and adaptability (Grabher 1993). First, there is a need to determine more precisely how history matters in developing new growth paths. While adaptation is closely associated with the notion of path dependency (either in terms of positive or negative lock-in), there is a tendency in the resilience literature to define adaptability as a move away from path dependency, as if new growth paths are detached from their past, as if regions need to deviate from their past to achieve that, and as if path dependency will cause insurmountable problems of adjustment. Instead, we argue that history is still key to understand how regions develop new growth paths, as its past not only sets limits but also provides opportunities. Second, there is a need to go beyond this trade-off between adaptation and adaptability to develop a comprehensive concept of regional resilience. We explore how this trade-off may be overcome at the level of industries, institutions and networks. Doing so, we make an attempt to capture industrial, network and institutional dimensions that have been either ignored in the resilience literature, or treated separately, without discussing the other dimensions of resilience.

First, we argue that the industrial composition matters for regional resilience. Specialized regions have been associated especially with the tension between adaptation and adaptability in the sense that the former harms the latter. Specialized regions are more vulnerable to sector-specific shocks, and they are more likely to be dominated by powerful vested interests that may oppose new growth

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paths. But above all, they have less local options at their disposal to recombine different knowledge domains and to diversify from related activities. However, we also argue that specialized regions may overcome this trade-off by linking to and activating uncommitted redundancies (like skills) in the region, by using their specialized knowledge base to diversify into related activities, and by means of connecting to industries in other regions, from which they can draw (related) resources and recombine those with their local knowledge base. In diversified regions, this type of conflict, in which adaptation harms adaptability, has less chance to become manifest, at least at the regional scale. Diversified regions are less sensitive to sector-specific shocks, especially when their industries are more disconnected in terms of input-output relationships, and when their industries are more skill-related, as this enhances their ability to absorb redundant labour (Diodato and Weterings 2012). But above all, diversified regions have more potential to make new recombination across local industries to develop new growth paths, and a higher probability to benefit from positive crossovers between related industries: the higher related variety is, the more opportunities for local industries to learn. However, this adaptability of diversified regions may still go at the expense of their adaptation, as they may suffer from a lack of focus and localization externalities. We argue that diversified regions are resilient when they have a mixture of unrelated variety and related variety, as variety into unrelated knowledge domains (unrelated variety) together with variety within each of these knowledge domains (related variety) solves the trade-off between adaptation and adaptability in both directions, as there is both focus within a domain and variety between domains. Moreover, diversified regions with a variety of skill-related industries combined with a moderate to low degree of local input-output relationships are also expected to be resilient, as they combine a capacity to sustain long-term development with a capacity to respond to short-term sector-specific shocks.

Second, we argue that knowledge network structures also affect regional resilience. The trade-off between adaptation and adaptability has its network analogy in connectedness and resilience. Local network structures can become excessive, inward-looking and network partners too proximate, especially in specialized regions. These local networks suffer from a lack of recombination possibilities and a predominance of a closely tied core that favours control and efficiency but prevents lock-out and makes the network vulnerable to shocks. We have argued that this trade-off may be overcome through the establishment of network connections (through e.g. gatekeepers) with more peripheral nodes, most preferably with related activities, or by means of rearranging their local knowledge networks to secure optimal levels of proximity between network partners, like in loosely coupled networks. By contrast, local networks may also be fragmented, with many nodes with few connections. These local networks provide opportunities to accommodate shocks and to get access to new and non-redundant knowledge. Here, the other type of trade-off (adaptability harming adaptation) is likely to prevail, as there is no regional cohesiveness which weakens the efficiency and control of collective behaviour in the network. Therefore, we expect that resilient regions have a core/periphery network structure with a balance between embedded relationships within cliques and strategic 'structural hole' relationships among cliques, as proposed by Fleming et al. (2007) and others, as this might provide a solution for the trade-off between adaptation (control and efficiency) and adaptability (openness) in both directions.

Third, institutions have also been linked to the trade-off between adaptation and adaptability of regions. Regions may become victim of institutional lock-in, when the institutional structure is entirely focused on the specific needs of the dominant industries. This is further reinforced when the local political elite is completely interwoven in the tight and rigid network described above. These regions are likely to suffer from institutional inertia in which institutions are not responsive to new developments and not adaptable themselves to support and accommodate new growth paths. This may be overcome by institutional plasticity (Strambach 2010), in which new required institutions are formed by key actors without directly challenging the overall institutional framework. In diversified regions, it is unlikely that powerful players can fully dominate the design of regional institutions. So, diversified regions may have a better capability to make institutional change to support new growth paths. However, in diversified regions, the other type of trade-off prevails, as there is lack of cohesiveness with too many interests that harms local commitment and control. Therefore, we

expect that resilient regions have a decentralized institutional structure that is responsive and open to newcomers (for the sake of openness) but still supportive and responsive to the needs of particular sizeable industries (for the sake of efficiency and focus). Moreover, we expect regions with industry-specific institutions that have a degree of institutional overlap to be better equipped to develop new growth paths (f.i. in related activities) without compromising on adaptation, as the overarching institutional framework is not fundamentally challenged.

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AGENDAS FOR CHANGE: ADDRESSING THE CHALLENGES OF POLICY PATH-DEPENDENCY'

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ABSTRACT: We are living a moment where the search for new approaches to shape and support development trajectories gain particular relevance. As Bernardo Secchi (2013) has pointed out, "after this crisis cities and territories will be radically different from today. This means that we have to imagine, and design for, situations different from the present". In this context, we are witnessing significant changes in the overall development policy framework, and particularly so in what concerns the European Union. As several authors have noticed, in the EU (and beyond) innovation policy has been mainstreamed into public policy, a new generation of regional innovation policy has emerged, the nature and scope of EU Regional Policy has been significantly changed and a pan-European Strategy Europe 2020 embraces the idea of the need for a "new" economy, prioritising the links with knowledge (smart), with nature (sustainable) and with society (inclusive). This was followed by the adoption of a Common Strategic Framework, which all Member states will share in the deployment of the "Structural and Investment Funds". Without questioning the need for change in the policy framework, but focusing on the policy delivery realm, it may be appropriate to question i) if there is a widespread awareness of (the implications of) the changes in policy approaches, ii) if one is underestimating the (constraints of) policy path dependency and iii) if one is being overoptimistic about the role of policy. The paper aims to address these issues on the basis of evidence from recent and ongoing policy design and delivery initiatives in the Centro Region of Portugal.

Keywords: innovation, regional policy, policy delivery, path dependency.

1. Introduction.

We are living a moment when the search for new approaches to shape and support development trajectories gains particular relevance. As Bernardo Secchi (2013) has pointed out, "after this crisis cities and territories will be radically different from today. This means that we have to imagine, and design for, situations different from the present". In this context, we are witnessing significant changes in the overall development policy framework, and particularly so in what concerns the European Union. As several authors have noticed, in the EU (and beyond) innovation policy has been mainstreamed into public policy, a new generation of regional innovation policy has emerged, the nature and scope of EU Regional Policy has been significantly changed and a pan-European Strategy Europe 2020 embraces the idea of the need for a "new" economy, prioritizing the links with knowledge (smart), with nature (sustainable) and with society (inclusive). This was followed by the adoption of a Common Strategic Framework, which all Member states will share in the deployment of the "European Structural and Investment Funds".

Without questioning the need for change in the policy framework, but focusing on the policy delivery realm, it may be appropriate to question i) if there is a widespread awareness of (the implications of) the changes in policy approaches, ii) if one is underestimating the (constraints of) policy path dependency and iii) if one is being overoptimistic about the role of policy. The paper aims to address these issues on the basis of evidence from recent and ongoing policy design and delivery initiatives in the Centro Region of Portugal.

2. The Agenda for Change in Public Development Policy.

A first argument that needs to be underlined concerns the depth of changes in the development policy framework. The mainstreaming of innovation in public (development) policy (e.g. McCann and

Ortega-Argiles, 2013) is a paradigmatic example of such changes and contrasts sharply with the rather marginal role that innovation played in the (regional) development policy of the early 1990s. However, the concept of innovation, its relationship with economic development and with geography also changed drastically (idem). Moreover, the wider (purposeful) context of development policy changed as well, and Europe 2020 is now aiming at building a "new" economy with a different and better relationship with knowledge (smart), nature (sustainable) and society (inclusive). Consequently, as Morgan (2013) puts it so bluntly, the new generation of (regional) innovation policy "implies a radically different approach to the way policy is designed, delivered and evaluated".

A second argument goes deeper in uncovering the nature of the current policy changes. Namely, it aims to highlight some of the main innovative features of the policy approach embedded in the "research and innovation smart specialisation strategies" (RIS3), the policy tool now dominating the preparation of the coming programming period of the European Structural Funds (2014-2020). Although acknowledging that RIS3 conceptual underpinnings are still evolving as its implementation unfolds, some points of departure from previous approaches are already quite clear. They are "place-based economic transformation agendas" (EC, 2012) requiring a grounded prioritization of policy areas and explicit and measurable expectations about the results and the impacts to be achieved. The selection process of priorities areas have to involve the main agents of (regional) change, through an "entrepreneurial discovery process" where the emphasis is put on "discovery" rather than on single innovations, in the sense that supported activities should have an amplifier impact in the regional economy, provoking a structural evolution in the productive fabric. Moreover, innovation strategies should be built upon existing resources and capabilities, for instance combining them in different ways, in order to achieve specialisations which are distinctive and competitive in broader economic spaces. RIS 3 approaches also endorse the view of the experimental nature of public policy, emphasizing the need to measure and evaluate its impact, so creating the needed flexibility to cope with changing circumstances or rethink unexpected results. In order words, the focus is now on designing policy trajectories as well as policy programmes.

The above mentioned characteristics do entail major conceptual and procedural changes. The need to involve entrepreneurial knowledge (knowledge about market growth potential, potential competitors as well as barriers to entry), combining it with "knowledge about science and techniques", points out to pluralistic processes of policy making, still largely unfamiliar to many decision makers and with inherent difficulties that have been identified and anticipated in the relevant literature. The emphasis on promoting the "development of collective action and experience aiming at exploring, experiment and discovering new opportunities" points out to intangible outputs, involving a cultural change that clearly goes beyond the emphasis on technology-transfer paradigm. The broader concept of innovation, accommodating different narratives like the ecological and the social in addition to the technological one, and valuing both science and practice based innovation, clearly challenges the prevailing conceptions that "tend to frame innovation narrowly as industrial innovation" (Morgan, 2013). These examples of conceptual and practical challenges are likely to emerge, through pluralistic policy-making processes, in many of the spatially-specific policy arenas where the new policy framework is supposed to be adopted. Indeed, the proposed changes will be in conflict with prevailing perceptions, in both private and public agents, about i) how policies should be designed and managed, ii) what sort of priorities should be supported and iii) what type of instruments and monitoring procedures should be followed. The available skills and competencies to identify and manage such challenges will vary greatly. The neglect and/or the inadequate institutional handling of these challenges will affect severely the expected policy outcomes and may lead not only to ineffective policies but also to the waste of qualified (and most needed) development opportunities.

The third argument is evidence-based, providing empirically support to the anticipated challenges mentioned above. It is built around the role of Universities in supporting regional development, and clearly illustrates the enormous potential and room for progress that such relationship contains but also throws some light on the institutional challenges and the practical difficulties that emerge when

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this approach is adopted. It is based on the experience of a four year long joint policy design process between the eleven municipalities of the NUTS 3 of Baixo Vouga (CIRA) and the University of Aveiro, stimulated and framed in the preparation of the EU Structural Funds for the 2007-13 programming period. This example is quite interesting because it anticipated the current emphasis that RIS3 is putting on the role of Universities. Indeed, the EU produced a Guide on how to link Universities with Regional growth (Goddard et al, 2012), the S3 Platform in Seville and the EUA (European Universities Association) held a joint workshop on the theme and produced a report, a dedicated Policy Brief is being finalized and the guiding principles are clearly stated in the European Commission's proposals for Higher Education Modernization Agenda (EC, 2011). However, a major point of departure from previous approaches is that the current policy framework envisages Universities as *active agents in the design of regional innovation strategies* while in past approaches they were seen as *active agents in the regional innovation system*. The subtle change in the perceived role of Universities makes a huge difference and may raise reasonable doubts about the preparedness of Universities to play such role. This situation mirrors, to a significant extent, the one that was experienced in Aveiro in the previous programming period.

3. The Agenda for Change applied in spatially-specific policy arenas.

A preliminary point to make concerns the dominant ideas about the relationship between Universities and the regions where they are located. Adopting a brief historical overview, and acknowledging the caveats of a simplified picture, three different phases can be distinguished. The traditional perspective highlights the positive impacts that a University has in the surrounding regions, due to the employment generated, and the higher levels of consumption and investment. Furthermore, the qualification of labour force and the image of prestige, which can attract further investment projects, are also recognized as relevant and significant impacts. This traditional view is still relevant and can indeed be purposefully used in a coherent regional development strategy. However, it also led to a "legacy" of unbalanced power structure between the University and the region, where the University held a privileged status and in most circumstances inhibited a "place-based empathy". The University tended to be not focused on the specificities of the region but rather on the relevant "universal" scientific settings.

A second phase emerged with the knowledge economy, when technology transfer opportunities became apparent and the Triple Helix model, inspired in Silicon Valley, deserved wide dissemination and acceptance. The importance of the "third mission" of the academy gained generalized support. The emphasis of this new phase, however, was in exploiting commercially the economic applications of the knowledge produced within the academy. This does not involve, in most situations, the understanding of how other actors operate, let alone the engagement in promoting structural changes in the way those actors operate. Nevertheless, there were other conceptual approaches, like the Civic University approach (e.g. Goddard, 2009) with quite different conceptual underpinnings – arguing that i) the third mission is not autonomous from the other two (teaching and research) and should be considered together, ii) the relationship should be supported by the "co-production" of transformative knowledge, iii) the links should go beyond the economic sphere and reach the socio-cultural dimensions, iv) the scientific approach to global challenges, like ageing or climate change, should enrich and be enriched by the study of the regional incidences of such challenges and v) the regional engagement of the University should be framed by a sense of purpose or directionality in regional development change. But this approach and other alternative views of the role of Universities in regional development were quite marginal in relation to the technology transfer paradigm. Indeed, many institutional changes took place under this framework, namely the mushrooming of Technology Transfer Offices, Science-based incubators, entrepreneurial (teaching) programmes, technology platforms and science and technology parks. Most of these initiatives tended to be "emanations" of the University, often overvaluing its own contribution and neglecting the role of (potential) regional partners, apart from a few selected agents themselves endowed with significant scientific resources.

The innovative partnership between the University of Aveiro and the eleven municipalities of the surrounding region was stimulated by the management process of the European Structural Funds in the 2007-2013 programming period. The main aim was the design of a Territorial Development Programme (PTD), a request for decentralizing the management of a given share of Funds to be applied in Municipal investment projects. This initiative did in fact involve two overlapping partnerships: one among the eleven municipalities and the other between the local authorities and a scientific institution, in this case the University of Aveiro. The institutional innovation came from the challenge to prepare the PTD under a partnership rather than under a consultancy contract. The decision was not an easy one for the municipalities and was the first not to be taken unanimously. The first stages of the process were quite interesting: not surprisingly, they revealed that, overall, Municipalities were not familiar with the research work being developed in the University and that academics were not familiar with local development challenges and policy priorities in the surrounding municipalities. This is a rather telling fact and highlights both the difficulties that Universities may have in contributing to the design of strategy for a region that they don't know well enough and for policy making institutions to accommodate the contribution of a University whose specific resources they don't know about. Eventually, in Aveiro, there were some moments of tension when discussing the policy agenda and the approach to the design of the projects to be financed. Much effort was then put in the alignment between the Lisbon Agenda priorities, the problems and expectation of local communities and research interests of the academy. This was a rather demanding task for all those involved and required institutional flexibility and an evolving policy design process. The University, for instance, felt the need to create a dedicated Pro-rectorship to better coordinate the work within the academy. In the end, the process proved successful, the PTD was publicly recognized as one of the best in the Centro Region (and, consequently, the share of funds for the municipalities was slightly increased) and the cooperation spread to other (almost twenty) projects that were not initially considered.

The PTD prepared was indeed quite different from most of the other PTDs in the region. The share of investment projects aligned with the Lisbon Agenda was much higher and the policy agenda was a much more balanced one. However, after implementation (4 years later), the difference between the investment pattern of the Aveiro region and those of the other regions was significantly blurred. There are many possible causes for this situation but two of them are certainly significant. First, the pressure to use European Funds led municipalities to resort to the (traditional) type of projects they were used to deal with and for which their own staff had the necessary skills and competences. Secondly, the partnership was only made for the design of the PTD and didn't include the management of the implementation process. In a similar vein, several of the other projects didn't reach the implementation stage while others proved successful but only under specific perspectives and fall short of expectations in what concerns the ambition for a more strategic and sustainable impact. In some of these projects, the conflict between the prevailing dominant ideas and the new cooperation framework being attempted was quite evident. That was the case, for instance, of a "regional incubation network" project, where the longstanding incubation services of the University should support entrepreneurship policies that should be promoted at municipal level, with the whole academy being eventually engaged, side by side with the regional community, in an entrepreneurial approach to local/regional resources. The shift from a science based to a general purpose incubator proved to be a difficult step to take within the University. Another example, the Science and Innovation Park, which basically was designed as a third generation science park, focused as much on the existing firms and differentiated municipal resources as on the University spin-offs and start-ups (i.e. an "extension" of the academia), proved difficult to gather institutional support within the academy. The institutional approach to the management of the implementation of the whole process also proved to be lacking, or being insensitive to, essential dimensions of the new policy framework. It was carried out on a project per project basis, losing sight of any attempt of building a sense of regional directionality.

It must be stressed that the whole project is also a major challenge to Local Authorities. These are faced with a different policy agenda and with a dialogue between local ways of dealing with policy

issues and more globally framed approaches, often with a more intensive use of scientific knowledge. Moreover, the new approaches are often more than just a policy adjustment; they require a shift from technocrat to sociocrat models of policy making, as well as multidisciplinary teams which may interfere with existing power structures within the staff of local authorities. Indeed, it may even led to questioning the shape of the "core" activities of the Local Authority. The question is about who is enlightening and supporting Local Authorities in perceiving and addressing these changes? Is it reasonable to assume that there is "spontaneous institutional capacity" in Local Authorities to deal with these challenges in face of the current financial pressures and severe adverse effects of the economic crisis?

However, it must be underlined that the overall outcome of the process in unquestionably a positive one. The Association of Municipalities and the University of Aveiro signed a new agreement for jointly preparing the new EU programming period (2014-2020).This decision was, this time, unanimously taken among the municipalities, which clearly reflects a positive assessment of the whole process. There is now a closer working relationship between the University and the municipalities, although some would argue that it misses quite important dimensions for a sustained, purposeful and socially accountable collaborative framework. There is no doubt, however, that there is a huge potential for progress in linking the University and the region where it is located. Acknowledging the difficulties and addressing them will help to fulfill such potential for progress. This may require more attention to be paid to the policy delivery landscape, to the mindset of the main agents of change, in parallel with the new ideas emerging within the new policy frameworks. The engagement in pluralistic policy making processes may lead to the regeneration of institutions, a point raised some years ago by Sotarauta (2007).

4. Final Note.

The paper aimed to underline that there are rather significant and crucial dimensions in the current policy frameworks for development policy, justifying the argument that one is dealing with quite relevant "agendas for change". The paper also argues for the need to uncover the depth of changes and the implications they are likely to have in the ongoing policy design processes. The time-pressure and the "easiness" devices to formally meet the criteria for change, together with the legacy of concepts and routines, may lead to the overlooking of difficulties and consequently to unfavourable situations, missing the goodness of the proposed changes. There is a need to focus on the "co-invention" of policy, i.e., adapting "general purpose policy guidance" to the specificities of spatially-bound policy arenas, by apprehending the general ambition and understanding the context-bound obstacles. In doing that, it is argued, we need to shift the lens of policy making and learn to link the policy ethos with the power to transform.

CREATIVE DYNAMICS, LOCAL IDENTITIES AND INNOVATIVE MILIEUS: RE-FOCUSING REGIONAL DEVELOPMENT POLICIES?

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ABSTRACT: Based on the case of the cultural and creative activities, this paper intends to discuss the relationship between territorial dynamics, local identities and the processes of development, focusing in particular on how local "milieu" can be decisive in innovation and on how territorial development policies can sometimes tend to not be understanding (and sometimes even be harmful) in relation to the dynamics of innovation of the territories where they are implemented.

Indeed, the dynamics of cultural and creative activities, in the spheres of production, consumption and mediation, cannot be disconnected from the territorial conditions in which they are enrolled, or the logics of governance and regulation that support those territorial systems. The understanding of the different interests and motivations of the agents which develop activity on those spaces, the knowledge of their practices and representations, or the awareness of the use conflicts there verified and of the collaboration and competition mechanisms established among them, are fundamental aspects to understand the conditions for a political action that does not put into question the sustainability of consolidated dynamics in each of these territories and that enables the resilience of regional development processes. Drawing upon the analysis of these aspects in a very diverse set of case studies in various cities in Europe, America and Asia, this presentation aims to systematize a set of challenges and key ideas that seem fundamental to (re)focus contemporary territorial and urban development policies, namely in the field of promotion of the often misunderstood "cultural and creative industries".

A first introductory section sets the framework for the analysis conducted in the paper. It aims to discuss the main pre-conditions for the provision of urban "creative ambiances" and to the sustainability and resilience of "creative milieu" situations, in order to think a renewed policy agenda for urban creativity. In this context, the objective will be to discuss the key-factors to the sustainability of the creative dynamics verified (relating it to aspects such as the regulatory and governance framework of these territorial systems, or their territorial identity), bearing in mind the contribution of creativity to territorial development processes. The analysis is centered on "embedded" experiences, that is, strongly territorially rooted dynamics, instead of on "public driven" ones (that is, the ones led by deliberated (public) action), although with the perspective of helping to support the policy decision-making .

Second section deals with the challenges to urban development and the rhetoric of creativity. Contextualizing the "attractiveness" for academia and policy makers of creativity rhetoric over recent years (and their multiple origins), and thinking them at the light of contemporary restructurings and globalization processes and their impacts on urban development, some aspects are put to consideration: (i) the need to consider creativity as something transversal, present in whole economy; (ii) the importance of understanding creativity as relative and contextual; and (iii) the relevance of the debate on considering creativity as something that can be promoted (or not) on an institutionalized way.

Assuming that some important aspects will last beyond the rhetoric (the creative dynamics themselves or the option for transversal policies), the attention is drawn to the importance of analyzing the relation between creative dynamics, the regulation of the diverse motivations and interests of the agents, and the conflicts between them, and thus, naturally, the governance mechanisms that are inherent to these systems. Some specific examples, in diverse fields (creative districts, reconversion of brownfield areas, field configuring events, specific territorially embedded facilities and institutions), are presented in order to illustrate the need to think these issues from a perspective that shift from the creative rhetoric to the facilitation of urban creativity.

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The third section draws on the results of a recent research project, the Creatcity project, which dealt with 10 case studies of urban creative territorially led dynamics in 3 cities (Lisbon, Barcelona and São Paulo), to illustrate the issues that are under discussion. Through the wide diversity of situations that were explored in this study (territories vs projects/experiences; bottom-up vs top-down; public-driven vs private-driven vs mixed initiatives; centrally located in the city vs peripheral ones; based on alternative activities vs mainstream activities, etc.), a set of typologies were constructed and enable us to understand the main regulation forms and governance mechanisms that are at the root of these "success" cases. The relation between conflicts of use, governance and sustainability of these territorially based productive systems is particularly explored, in order to draw some conclusions on the relation between the dynamics of these creative milieus and urban governance.

A fourth section introduces a more focused analysis on the specific topics of the paper, driving us from the territorial dynamics to the milieu effects on the cultural districts case. Different essential characteristics of cultural quarters, essential to their vitality and resilience, are presented through a panoramic journey over several creative quarters throughout the world (Akihabara, Tóquio; Marais, Paris; Beyoglu, Istambul; Capitol Hill, Seattle; Bricklane, Londres; and Kreuzberg, Berlim), highlighting some aspects that are central to illustrate the importance of these milieu effects on the structuring of these local production-consumption systems.

These introductory aspects allow us to center, on the fifth section, on the systematization of most important aspects of the relation between cultural quarters and the "creative milieu", particularly the importance of conflict and informal dynamics as drivers for artistic vitality. Departing from a conceptual systematization of some aspects that are common to these creative milieus ("traditional" aspects such as dimension, density and heterogeneity of social practices, but also other related to the management of symbolic sphere and reputation, critical on cultural activities), regardless the huge diversity of situations that characterize cultural quarters concerning both their origins and their main characteristics, it is argued that these situations gain on being read at the light of the "creative milieu" notion, understanding the development of these "creative ambiences" in a triple perspective, combining three intertwined analytical layers (the localized production system; the governance system; and the representations system). Bearing this in mind, two main aspects are detailed in the analysis of the cultural quarters as creative milieus. On one hand, the use conflicts that are usually verified in these areas, resulting from the different interests and motivations of the agents that are located on those areas. This conflict, expressed in different arenas (real estate market, public space appropriation, symbolic sphere,…), it is often marked in two main domains: gentrification processes and externalities effects, and the paper illustrates it in a wide variety of aspects, through examples in several cultural quarters. On the other hand, the informality, that is a typical facet of these areas, and which is particularly visible on the fundamental role that public sphere plays on the creative milieus dynamics. Diverse informal-based dynamics emerge and are vital to the development and resilience of these milieus and of creative dynamics, such as the artistic appropriation of public sphere (e.g. graffiti and street art, private-public contamination strategies in performing or visual arts), the informal appropriation by users (including important mechanisms on sociability, reputation building and gatekeeping processes), or the performativity in public space, associated to liminality processes or to expression of identities or of the self (e.g, multicultural or gender expression).

On a sixth section, four key-issues concerning the sustainability and resilience of these systems as vital creative areas are identified: (i) the need of a permanent management of the diverse interests and of use conflicts; (ii) the recognition of the importance of the symbolic sphere and of territorial reputation management; (iii) the importance of promoting local identity and specificity, but being aware of the identitarian complexity on these processes; and (iv), the relevance of flexibility and facilitation, keeping attention to non-institutionalization.

Finally, a brief conclusion draws our attention to some aspects that are for us fundamental to renew the agenda for urban creativity, taking in consideration the need (i) to understand the territorial systems, their formal and informal dynamics (and act integratedly on them); (ii) to understand and facilitate existing dynamics (from top-down to bottom-up); (iii) to be permanently attentive on

monitoring and managing conflict; and (iv) to take in consideration some specificities, in the current age of austerity, faced by some particular territories.

Keywords: creativity, innovative milieus, cultural activities, regional development policies, local development.

RESILIENCE AND VULNERABILITY IN CREATIVE CAREERS: WORK AND GEOGRAPHICAL STRATEGIES OF CREATIVE GRADUATES IN UK

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ABSTRACT: The paper explores the different career patterns and economic performance of creative graduates across different creative disciplines in the UK, to understand their resilience strategies and issues linked to their vulnerability. While it is widely acknowledged in the literature that careers in the creative field tend to be unstructured, often relying on part-time work and low wages, our knowledge of how these characteristics differ across the creative industries and occupational sectors is very limited. Furthermore, we have little understanding of the changes taking place in careers strategies and patterns over time, specifically after graduation. Data from the Higher Education Statistical Agency (HESA) are presented, articulating a complex picture of the reality of finding a creative occupation for creative graduates. We compare the career sectors, jobs and geography of creative graduates between 6 months and 3.5 years after graduation to understand the shifts and changes that bring to career progression, stable occupation or change of sector for these graduates. Geography plays a crucial role also in offering graduates opportunities in creative occupations and higher salaries. The findings are contextualised with the pre-recession cultural policy framework and conclusions are drawn on whether the creative industries policy construct has hidden a very problematic reality of winners and losers in the creative economy.

Keywords: Career resilience; creative graduates; creative industries; labour migration

1. Introduction

This presentation is structured in three parts. The first part highlights the recent literature (and policy initiatives) surrounding the development of the creative and cultural sector, particularly exposing the contradictions between policy discourses and the literature on creative work. The second part engages with the concept of resilience. It proposes to link ideas of regional resilience to the importance of resilience in individual careers and work trajectories, introducing the notion of 'creative graduates' as proxy for resilience. The third part, introduces some preliminary data to question how we can measure resilience in creative careers. In the conclusion we highlight future research trajectories.

Part I: Contradiction of creative work discourses, from the creative class to the under-class

The paper takes as a starting point the key contradictions that surround creative work discourses in the current policy and academic discourses. On one side, it is easy to see the hype that has grown and has surrounded research and policy interventions in the development of the creative industries (in UK and throughout Europe) but also the emphasis placed in the US and international context on the role of the creative class (Florida 2002). On the other, we see a growing literature highlighting the unstable careers patterns and limited economic rewards offered to workers in creative and cultural occupations, suggesting the present not of 'creative class' but of a 'creative under-class' (Morgan and Ren 2012). It is important explore further these contradictions in policy and academic discourses:

Policy discourse: the role of creative industries & creative class in economic growth: In **UK**, in 2005 Gordon Brown, then Chancellor of the Exchequer, made available £12 million (over a period of two years) to develop leaders in the 'cultural and creative sectors' (Devlin, Carty et al. 2008). His commitment to support the creative sector was re-affirmed in his 2007 speech launching his bid to become Labour leader and then again, as Prime Minister, in April 2009 when he pointed at the creative industries as a means to 'pull Britain out of recession'. In **Europe**, the emphasis on creative and cultural industries has also grown in the last decade, leading to a new Creative Europe Strategy from 2014 (http://ec.europa.eu/culture/creative-europe). The recent communication on "An

integrated Industrial Policy for the Globalisation Era" (European Commission 2010) states that "the cultural and creative industries are important drivers of economic and social innovation in other sectors" (p.29), with the number of policy reports and strategies in this field growing across a variety of countries and city-regions. **Internationally**, more and more countries are working in defining their creative and cultural industries sectors and strategies, with East Asia and China placing new emphasis on their role in the creative economy (Montgomery 2011).

Creative work literature: the challenges and rewards of creative careers: The literature highlight that some the difficulties of creative work are closely linked (and almost a response to) the structures and business challenges faced by the creative industries and in general creative and cultural production. It is important to highlight how some of the key issues and challenges of creative work are linked to the key structures and dynamics of creative and cultural productions:

Risk-sharing business models & unstable contracts conditions: As many sectors in the creative and cultural industries deal with new products and contents for which market success is not certain, risk is a major factor. Production and risk is therefore shared by different companies involved in the creative work (Caves 2000) and it is also passed on to workers via unstable contracts and temporary work (Ross 2003).

Pool of talent, project work & creativity : production is organised in temporary projects (Blair, Grey et al. 2001, Grabher 2004) which rely on a wide pool of talent and skills (Grabher 2001). Individuals are under pressure to deliver new creative projects and their work is measured by their performance in this ever changing environment (Blair 2001). The industry relies on new ideas and new products, therefore, the continuous renew of staff and projects is structural to the sector(Howkins 2002). The instability is therefore not only related to the contacts but also to the pressure to perform and network for the next job (McRobbie 2002), leading to self-exploitation and disappearing in the 'dark matter' (Sholette 2011).

Creative careers can therefore be read as a balancing act between the individuals need for stability and security towards supporting his/her own livelihood and self-expression and the pressure that derives from the organisational forms that the sector adopts to secure its financial viability.

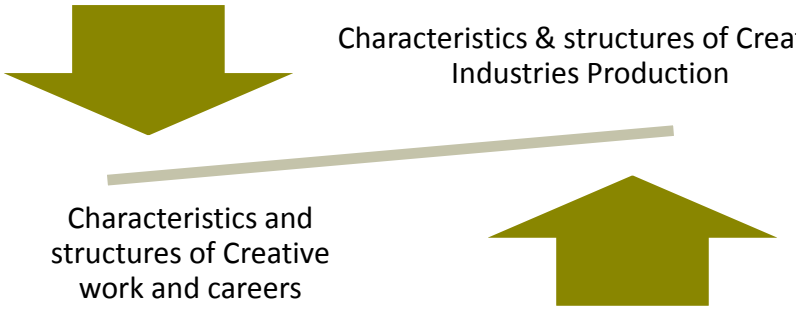

Fig 1: A balancing Act: managing creative work within the challenges of creative industries production

Part II: Resilience: a complexity perspective from regions to individuals

The concept of resilience is mainly used in the regional and economic development literature to refer to geographical areas able to adapt or respond to economic shocks and maintain or improve economic conditions (Christopherson, Michie et al. 2010, Hassink 2010, Simmie and Martin 2010).

However, the term resilience is used also within the broader literature on complexity and ecology (Holling 2001). In this literature, resilience can be seen as an emergent behaviour as system level but derived by the complex interaction of agents in the system which themselves adopt resilient behaviours. We can therefore suggest that the resilience of a region or city is the sum of the resilience of the individuals within the region or city, in as far as individual which are open to challenges and career changes, or to use their knowledge across a variety of sectors, will be able to

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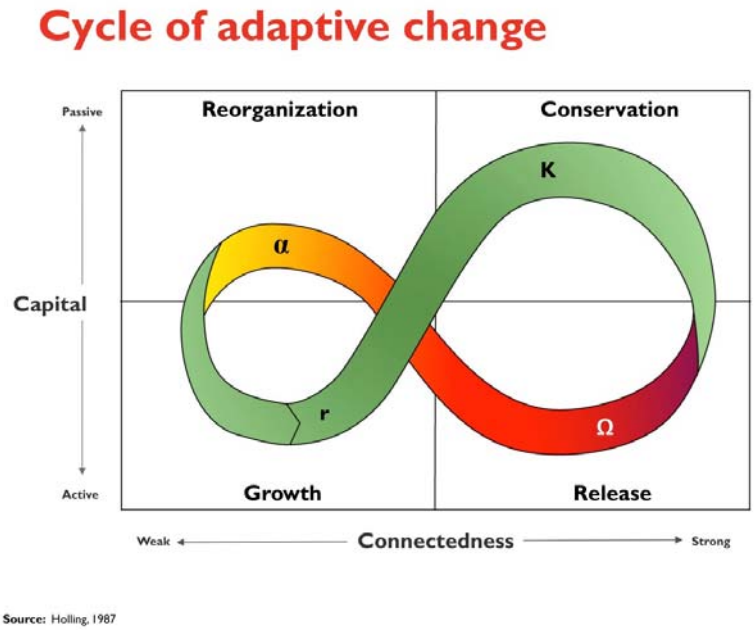
bounce back or devise new patterns of growth for the overall system. Importance of **individual career resilience** (Fourie and Van Vuuren 1998) in broader economic arguments about resilience of regional economies.

It is interesting to note that within the creative and cultural field the use of the term 'resilience' is also growing: from analysis at the macro level in reference to cities (Landry 2005); to the economic strategies of arts organisation in recession (Robinson 2010) to resilience and vulnerability in creative careers (Christmann and Ibert 2012, Ibert and Schmidt 2012)

From the perspective of the literature on career resilience in relation to creative and cultural work, if we consider the previous observation about nature of work and employment in the creative sector, we can certainly agree that this field is a particularly important testing ground for career resilience. The definition of London (1983) considers career resilience as "an individual's resistance to career disruptions **in a less than optimal environment"** while the one of Gordon (1985) highlights **"the ability to thrive, mature and increase competence in the face of adverse circumstances"** which we believe fit very well in the conditions and work undertaken by creative graduates.

In our analysis we are specifically interested in exploring the concept of career resilience from the perspective of **creative graduates** (graduates awarded a higher education degree in arts and creative disciplines). Using the 'adaptive cycle' proposed by Holling (2001) we consider the cycle as representing the phases of the career development of graduates entering the creative economy and wanting to find work in a creative job.



Source: Holling, C. S. 2001. Understanding the complexity of economic, ecological, and social systems. Ecosystems 4(5):390-405.

In the R (growth) phase Creative Graduates are looking to exploit the human capital & skills accumulated at university. They have low level of capital and connectedness and look for jobs or opportunities to enter the labour markets towards K (Conservation). Research graduates (6-18 month after graduation) use a variety of strategies to create connections (portfolio) and capital (salary), often accepting low paid jobs or internships or working outside the creative sector. However, as their capital and connections increase, we consider whether graduates in the long term (18 -36 months after graduation) – who did not manage to enter their aspired creative occupation – are willing to go through a Ω (release) phase, changing perhaps job or location and using their connectedness to seek career satisfaction in a creative occupation. This will correspond to a α (re-organisation) phases where achieving a creative occupation will correspond to new organisational

forms for their work either via freelancing, entering a different sector or moving to a different location.

Part III: Some preliminary data & conclusions

In our preliminary data analysis, we compare graduates data from the short-term period (6-18 after graduation) to the long-term period (3.5 years after graduation). While the full data will be made available in a forthcoming paper, we want here to simply reflect on some preliminary data. One in relation to the picture of creative graduates in phase α (as per Holling model), therefore entering a creative job at 3.5 years after graduation. Amongst graduates in this phase, 51.45% were previously in a non-creative job, showing the long-term resilience in trying to achieve the aspired creative occupations. 21.86% were unemployed, showing the particular different economic context of creative and cultural workers, and their higher level of job instability.

Table 1: Entering a creative occupation at 3.5 years after graduation

	Non-creative Graduates	Creative Graduates	Total
Non-creative job	1,136	320	1,456
	60.11	51.45	57.96
Further study only	340	103	443
	17.99	16.56	17.64
Unemployed	266	136	402
	14.07	21.86	16
Other	148	63	211
	7.83	10.13	8.4
Total	1,890	622	2,512
	100	100	100

Table 2 considers the geographical implications of this re-organisation. As we can see, of all graduates at 3.5 years after graduation, graduates able to occupy a creative job have had to migrate multiple times (between university and to find jobs).

Table 2: Entering a creative occupation at 3.5 years after graduation, migration patterns

	All			Creative Graduates		
	Non-creative job	Creative job	Total	Non-creative job	Creative job	Total
Non-migrant	16.63	11.88	15.69	16.87	12.37	14.67
Late Migrant	7.15	7.02	7.12	5.93	8.00	6.94
Uni Stayer	12.71	14.35	13.04	14.26	16.44	15.32
Return Migrant	24.79	18.53	23.55	32.32	18.74	25.7
Repeat Migrant	38.72	48.22	40.6	30.63	44.44	37.37
Total	100	100	100	100	100	100
No of obs.	17,226	4,258	21,484	1,417	1,350	2,767

Concluding remarks:

The brief analysis undertaken in this presentation aims to simply stimulate some reflections and comments in the connections between theories of geographical resilience and tales of individual accounts of resilience, specifically as experience by creative graduates – having to respond to general adverse economic circumstances in relation to creative industries and occupations.

We are interested in expanding our research in this area to include further reflection on how creative graduates enter the creative economy and how they perform within it in the long term. Specifically, understanding the need to juggle change (in sector, occupation or geography) to achieve a creative

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career. However, we do not want to forget the self-exploitation and social insecurity which results from promoting individual resilience in a sector which might not be able to offer life-long opportunities and careers.

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MARITIME CLUSTERS EVOLUTION: THE (NOT SO STRANGE) CASE OF THE PORTUGUESE MARITIME CLUSTER

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Abstract: Experience around the world has shown that the concept of clustering suits particularly well to maritime businesses. There are numerous benefits, ranging from specialised labour to targeted training, from increased market awareness to connections with R&D institutes and from strategic co-operations to inter-related maritime activities (Wijnolst, 2009). Despite the large maritime industry in Europe and worldwide, there is little systematic information concerning the degree of interaction between maritime firms. The European network of maritime clusters is one of the pioneering initiatives concerning the cross-country maritime clusters of Europe. The concept of maritime cluster has a dynamic connotation. World major maritime clusters (New York, London, Hong-Kong, Shanghai, Singapore, Rotterdam are identified on the basis of an assessment for the maritime services offered and most of the clusters are in the categories of "Alpha" and "Beta" World Maritime Cities). Clustering is viewed to enhance the advantage of competitiveness. It generates productivity, engenders innovation and symbolises the transmission of new information. As Porter (1998:245) argues the "ultimate test of the health or decline of a cluster is its rate of innovation". There is a clear dependency between the commitment to innovate and profitability in businesses. As such, these clusters evolve over time in term of the composition of the services provided, reflecting different stages of economic and social development. Maritime clusters evolution can be studied referring to biological science (bio-economics as in Zhang & Lam, 2013) allowing for comparative and prospect analysis. A comparison between different European and non-European maritime clusters is presented, in order that a first cluster typology can be established.

Keywords: maritime clusters, typology, innovation, maritime cities.

1. Introduction

Ships carry the majority of commodities that are traded in international markets. The development of the shipping industry is closely related to the development of the world economy.

Globalisation of the economy has resulted in fierce competition from new entrants, mostly in Asia, to the detriment of the traditional shipbuilding and shipping nations.

European ship owners control under the European flags and other open registries, some 40% of the world fleet. Given the importance of shipping for seaborne and world trade, and consequently for European exports and imports, these sectors are essential for the future of the European economy.

Experience around the world has shown that the concept of clustering suits particularly well to maritime businesses. There are numerous benefits, ranging from specialised labour to targeted training, from increased market awareness to connections with R&D institutes and from strategic co-operations to inter-related maritime activities (Wijnolst, 2009).

Wijnolst, Jensen and Sødal (2003) present a maritime sector benchmarking – the Global Maritime Benchmarking - and nine indicators (structural indicators; economic indicators; internationalisation; critical mass and leader firms; level playing-field; innovation; institutional framework and business networks; labour market and education; and image and communication) that allows evaluating a maritime cluster evolution and strength. The authors also suggest a public strategy that supports the cluster development.

To study maritime clusters, the OECD "mega-cluster" concept (*"a group of economic sectors that calls upon a set of complementary capabilities and to network associations")* is probably the best to analyse a set of economic sectors such as: naval construction and repair; shipping and maritime ports; fisheries and aquaculture; fish processing and commercialisation; cruise and nautical tourism; teaching and R&D; Navy; "new" maritime sectors: (wave and tide energy, biotechnology, etc.).

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Some authors (Lagendijk, 2000) argue that only through cluster development can a maritime company (or nation) escape obsolescence. However, there are some problems, namely those connected with standardising all EU maritime clusters or the creation of a "large continental EU cluster". There are both regional and national clusters, some with a top-down origin (ex., Germany), others bottom-up (Norway) and finally others mixed (Netherlands). Almost all include the more traditional sectors but activities such as tourism or leisure are more controversial.

The current economic and financial crisis has also delayed the EU maritime clusters operation. Maritime economy has as its major engine international trade, which in turn depends from world economic growth, in general and sectorial economic growth, in particular.

2. Typology of Maritime Clusters

The changing performances and composition of maritime clusters reflect their various roles in different regions and eras.

One can identify four types of maritime clusters. In the first type, maritime activities focus on port (cargo loading and discharging functions) and shipping functions. Such functions are local and territory dependent. Relationships and connections among and within maritime sectors are simple and rather loose.

Maritime activities do not act together, when making decisions. Users are more familiar with individual sectors or various port services, rather than the maritime cluster in its entirety.

In the second type, cargo allocation and value-added processing are at the centre of the cluster. It is the typical centre of logistics and cargo allocation, aiming to provide value-added production and services. The geographic scope is regional and larger than port in Type 1.

The port presents a transport, industrial and commercial service centre. Some maritime sectors develop towards the hinterland. Type 2 cluster performs not only the function of transportation, but has close relationships with trade partners and municipalities. Such relationships are present in a reciprocal way. Examples: Rotterdam, London, Hong Kong, Singapore. Osaka and Kaohsiung are current examples.

The third type of maritime clusters emerged in the 1980's in the background of world trade changing its pattern and developed in depth and in dimension, which called for an extensive transport network.

Maritime clusters adapted to allocate not only the products and capital but the technology and intangible information. These activities are carried out in a much larger geographical area than Types 1 and 2 and the sphere of influence is regional or even global. Maritime cluster plays a special role in the global/regional supply chains for its capacity of processing and distributing information.

Such characteristics satisfy the new international trade pattern which involves in before, after and even during the production process. Maritime clusters are regarded as the supply chain hub in global/regional economic and trade markets. Rotterdam, Hong-Kong and Singapore are examples of this type of maritime cluster.

The fourth generation of clusters appeared in the 1990s with characteristics of physically separated but linked through common operators or administration. It mainly results both from vertical and horizontal integration adopted by transport operators. Type 4 maritime cluster appears with this new function as a maritime service centre instead of taking port and physical cargo logistics as core activities. The concept of local or regional territory vanishes.

Type 4 maritime cluster can provide services to users who are very far away. Maritime services in this category are provided in a wide range, such as ship finance, maritime law, marine insurance, ship registry, ship chartering, ship brokering, etc. London represents a typical example.

The Portuguese Maritime Cluster

Today Portugal has the 11th biggest surface of jurisdictional waters, which corresponds to 19 times its territory – 91,763 sq.km. It is the MS with the largest area of jurisdictional waters. With the Continental Shelf Limits enlargement up to 350 miles, Portugal will have under its jurisdiction a maritime territory of 2,150,000 sq. km.

The maritime area under Portuguese jurisdiction will cover 40 times more territory than Portugal's land space and will represent more than 80% of EU 27 member states terrestrial area. However, the contribution of maritime activity for the GDP is only 2.8% (Simões, 2013). Relationships and connections among maritime sectors are rather loose, as Ferreira acknowledged through inquiries (2011). The Portuguese maritime cluster belongs to the first type: maritime activities focus on port and shipping functions, as the I-O (Leontief matrix) analysis (Simões, 2013) has identified.

How can the Portuguese Maritime Cluster be developed? Which is the best public strategy to support the cluster development?

The Portuguese Cluster is type 1. Its development strategy should consist in making it going through the next phases, as quick as possible. In order to transform it into a type 2 maritime cluster, support should be addressed, on one hand, to ports, maritime transports and logistic centres. These are the sectors with more intersectorial connections. Major firms can be found in them. Logistic infrastructures were already developed during the last 5 or 6 years. Ports, in particular, have a sound financial situation and good perspectives (due to the growing exports by sea to extra EU markets). They also can have access to the Spanish market. On the other hand, public strategy should also prioritise Universities and R&D centres, as these are also sectors largely interconnected with the other sectors of the Cluster, with large international connections. It adds that they can bring the Cluster to phases 2, 3 or 4 through technology and information transfers, both to the actual and to the future maritime Cluster sectors.

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CLUSTERS EVOLUTIONARY PROCESS IN A CHANGING ENVIRONMENT THE ROLE OF SOCIAL CAPITAL IN RESILIENT TERRITORIES: MECHANISMS FOR GROWTH

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Abstract: This work focuses on some structural transformations that are taking place in several local production systems in Europe (and worldwide) that affect their own competitiveness and development potential. Based on a set of case studies analyzed within western (mostly EU) countries, we identify key trends and critical drivers for the evolution of clusters. This work has theoretical and empirical implications as the topic of cluster evolution is being analyzed and debated with particular emphasis on the increasing importance of advanced knowledge processes (generation and dissemination). In our case, a wider socio-economic perspective is taken that also includes the role played by social capital in such upgrading processes. Important implications are then derived for proactive public policy that aim at promoting the resilience and prospective competitiveness of traditional and new clusters in advanced economies in the current globalized economy.

Keywords: clusters, evolution, drivers, knowledge processes, social capital.

In the last thirty years, the surge of 'local productions systems' (LPS) has interested scholars and policy-makers due to their potential to enhance innovation and regional economic development (Moulaert & Sekia, 2003). Clusters, the most popular and one of these ideal-type LPS, are defined as "the geographic concentration of interconnected companies and institutions in a particular field that compete and cooperate with one another"(Porter, 1998). According to (Duranton, Martin, Mayer, & Mayneris, 2010), four reasons summarize such popularity: the inspiring case of Silicon Valley, the spread reached by Porter's approach, the loss of reputation of 'traditional' policy approaches to industrial and regional development based on national champions and public subsidies, and the opportunity offered by clusters to be promoted by different layers of the public administration.

However, the positive perception about clusters is being challenged in a context of greater uncertainty that demands faster clusters' adaptive competences (Frenken, Cefis, & Stam, 2011; Li & Bathelt, 2011; Parrilli, 2012), and by some theoretical and policy flaws (Li, Bathelt, & Wang, 2012; Martin & Sunley, 2003). This fact is highlighted by major difficulties faced by the former successful Italian cases that "since the beginning of the new millennium,… are experiencing a crisis and are undergoing a phase of profound restructuring" Dei Ottati (2009). One consequence of this new situation is the renovated academic interest and debate on the evolutionary aspects of cluster development (Boschma & Fornahl, 2011; Frenken, et al., 2011; Lorenzen, 2005). In the LPS literature, social capital has increasingly been considered a primary driver providing critical cognitive and normative resources (Cooke, 2001). Within this framework, our work offers a conceptual framework about the role of social capital under the hypothesis that social capital activates various critical mechanisms of growth through the different stages of the cluster trajectory. With this objective in mind, we have identified and framed several relevant mechanisms of social capital that could modify/boost the cluster evolution, and we have later tested our hypothesis with critical international empirical evidence.

Attempts to conceptualize the evolution of clusters have been carried out through different approaches, such as the 'complex adaptive cycle' (Martin & Sunley, 2011), (Albino, Carbonara, & Giannoccaro, 2005; Fioretti, 2006), more classical 'life cycle' (reviewed in (Bergman, 2008)), integrated framework (Li & Bathelt, 2011; Li, et al., 2012), and eclectic (Knorringa, 2008; Parrilli, 2004). Currently, the 'cluster lifecycle' approach is the most popular framework. During the 90s, studies in this vein provided useful insights about key mechanism to explain reasons for a positive growth dynamic as well as sources of decline. For instance, the effects of imitation and specialization as growth drivers and myopic behaviour as a source of decline (Pouder & St. John, 1996). Another example is the empirical analysis of firms' entry decisions based on the strength of the cluster in its

industry and among its surrounding clusters as well as the consequences of congestion costs (Swann, 1998).

In the last decade, a revived interest in cluster development trajectories has resulted from a combination of critical assessments and demands. First of all, the earlier studies modelled trajectories on the basis of a deterministic view and the subordination of cluster performance to underlying changes in technology and industry life cycles (Hassink, Fornahl, Menzel, & Tödtling, 2012; Martin & Sunley, 2011). Secondly, some conceptual vagueness detected in theory development as well as observed failures in policy application (Martin & Sunley, 2003; Maskell & Kebir, 2005). Thirdly, the need for a perspective focused on the analysis and understanding of material trajectories rather that to test how specific cases fit into general models (Humphrey, 1995) Fourthly, the 'evolutionary turn' in economic geography (Boschma & Martin, 2007; Boschma & Martin, 2010; Hassink, Fornahl, Menzel, & Tödtling, 2012) that denotes efforts to explain the spatial evolution of firms, industries, networks and regions and the firm entry, growth, decline and exit on the basis of the following aspects: path-dependence, lock-ins, non-linearity, feedbacks, and self-reinforcing interactions (Boschma & Frenken, 2006):

In the last five years, the so-called 'new clusters life cycle' (NCLC) strand has been stressing several aspects such as the importance of knowledge diversity as the critical change and adaptive driver, the co-evolutionary nature of heterogeneous firms, networks, industry and institutions, and the possibility of cluster autonomous trajectory (Menzel & Fornahl, 2010; Ter Wal & Boschma, 2011). Among these features, the dynamic influence of social capital is a crucial although not yet well analyzed factor. Therefore, and following the idea of the gradual approach of stage development based on social embeddedness (Parrilli, 2004). we argue that the multidimensional and complex character of social capital may have a proactive role throughout the various stages of the CLC.

Social capital was defined by Putnam (1995) as "the features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit". Its popularity has been growing based on the agreement that investments in collaboration and social exchanges create economic value (Becattini, 2004; Glaeser, Laibson, & Sacerdote, 2002; Granovetter & Swedberg, 1992; Malmberg & Maskell, 2002; Parrilli, 2009, 2012; Staber, 2007). Used in different academic fields, this 'elastic' concept (Kenney & Patton, 2003) has been adopted in LPS literature under the argument that social capital could be considered the "missing ingredient" that stimulates cognitive (information and learning) and normative (values and trust) resources acquisition (Cooke, 2001).

Following this line of argument, the presence of a strong and homogenous ´local community' system of values and norms, which is strongly emphasized by the Italian neo-marshallian school on industrial districts, has positive effects on cluster competitiveness (Becattini, 2004) by means of two interdependent forces that produce a 'positive sum game' such social cohesion/trust and self-realization via intense entrepreneurship (Parrilli, 2004, 2009) and by the subordination of "individual interest to the larger interests of the community" (Wolfe, 2002).

In this approach, we introduce Becattini's contribution (1990), when he states that the "homogenous system of values and views, which is an expression of an ethic of work, the family, reciprocity, and change"…"constitutes one of the preliminary requirements for the development of a district, and one of the essential conditions of its reproduction". Based on these specifications, three elements are picked up as salient factors of social capital:

- Ethic of work: Ethic of responsibility, discipline and commitment towards a business and socio-economic aim.
- Attitude to change: Willingness to change (and to take risks), individually and collectively, in order to learn and improve the business competitiveness.
- Reciprocity: Attitude towards sharing benefits and commitments/sacrifices within the local community as a means to produce an inclusive/collective development.

In our view social capital is identified by these three underlying social values that influence long-run collective interactions towards the generation and enhancement of activities that entail economic value. Consequently, it provides a competitive advantage, basis for differentiation vis-a-vis other regions.

On these bases, our framework is directed to connect three facets of social capital which are considered significant to influence specific cluster development-inducing mechanisms -cultural, institutional, and knowledge and innovation-. The effects of such combination will have a significant impact on cluster performance.

The first one takes into account some specific cultural attributes that provide impulse to pursue economic activities. Within this approach, social capital is a conduit of open and proactive attitudes towards the development of new business and technological endeavours as well as towards the integration of people with different cultural backgrounds and skills.

The existence of an homogenous social fabric based on an attitude of change promotes non-risk averse behaviours which contributes to the encouragement of self-realization through entrepreneurship (Parrilli, 2009), the provision of legitimizing incentives (Pouder & St. John, 1996; Suire & Vicente, 2009), and the overall enhancement of collective identity (Staber & Sautter, 2011). In addition, a solid social capital base anchored in reciprocity values favours the generation of open attitudes towards the assimilation of people with different cultural backgrounds and skills in the socio-economic system favours adaptation and change. Even though, the initial absorption of migration flows with different capabilities might have incongruous effects, the incorporation of people with different cognitive and social capabilities are likely to produce constructive effects varying clusters' capabilities overtime. The capacity of the Silicon Valley to absorb Chinese and Indian ethnic and business communities and to benefit from their capabilities seems to justify this interpretation (Parrilli, 2012).

The second one refers to social value-based collaborative patterns through regulations, organizations and routines that serve as formal and informal frames to conduct socioeconomic interactions. The regulatory framework, based on reciprocity values, is understood as a formal set of regulations that coordinate and control productive activities, is derived from ongoing processes of development of collective governance rules. This is typically observable in several European countries where the development of formal collaborative schemes takes the form of cluster associations and proactive chambers of commerce, production cooperatives or credit consortia (Parrilli, 2004). The common system of values also supports the competitiveness of clusters through the process of building a locally-shared development plan for the region in the medium and long-term (e.g. infrastructures, trade fairs, science parks). An additional mechanism is the existence of informal norms based on reciprocity values which entail coordination means supporting economic dynamism and helping in the management of local conflicts. Finally, the availability of financial services is another key issue related with institutional development in clusters (Pietrobelli, 2000). A system of social relations combined with an attitude to change offers ways to enhance a "local network of business credit" (Russo & Rossi, 2001). At the beginning of the clustering process credit risk is absorbed through family links, friends, and venture capitalists funds that again represent a growth mechanism induced by the underlying social capital at work in the region.

The third facet (knowledge and innovation) is concerned with how an open (positive) social capital encourages the establishment of new connections that help to collect and share knowledge in a way that increases the stock of knowledge diversity. This exercise of sharing valuable information could be produced by formal and informal conduits, responding in this way to the need of obtaining better access to key inputs for larger production scales (efficiency needs). Contextually to knowledge accumulation and diffusion, social capital promotes deliberate actions to build up training schemes that complement the available resources with appropriate technical skills (Pietrobelli, 2000) in accordance with the cluster's production needs. This mechanism is mainly driven by the social capital facet called 'attitude to change' that secures the required framework for adapting to external pressures.

The proposed framework is going to be applied to different phases of the CLC in various empirical cases (clusters) in order to verify how social capital activates the multiple types of inducing mechanisms as a source of dynamism for the cluster development trajectory. A preliminary comparative analysis will be applied to seven case studies taken from different countries and industries.

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PARALLEL SESSIONS

Session 1 - Theoretical contributions towards the integration of resilience, innovation, creativity and/or other relevant regional science branches

LAND PLANNING POLICIES TO IMPROVING THE RESILIENCE OF TERRITORIES TO FLOODING

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POLÍTICAS DE ORDENAMENTO DO TERRITÓRIO PARA MELHORAR A RESILIÊNCIA DOS TERRITÓRIOS A INUNDAÇÕES

RESUMO: Actualmente, questões ambientais e riscos associados às alterações climáticas representam um desafio para a resiliência dos territórios, nomeadamente os que resultam de fenómenos hidrológicos extremos ou eventual subida do nível médio do mar, conduzindo a inundações. A ocorrência de inundações, enquanto fenómeno natural, pode pôr em causa a segurança de pessoas, de bens e do ambiente, pelo que é fundamental reduzir o risco e consequências que lhe estão associadas, atenuando-se efeitos negativos, através de medidas mitigadoras (Decreto-Lei n.º 115/2010, 22 Outubro). Por outro lado, omissões no processo de planeamento e pressões para o uso de espaços marginais têm conduzido a situações mais agravadas. Neste enquadramento é necessário avaliar os efeitos de inundações, proceder ao zonamento das áreas ameaçadas e quantificar riscos. Estes factores funcionam como indicadores de potenciais consequências associadas a diferentes cenários de inundações, sendo fundamental o estabelecimento de planos de gestão dos riscos de inundação, que definam níveis de protecção e identifiquem medidas de prevenção integradas para mitigação do risco, não omitindo as questões ambientais salvaguardadas na Lei da Água, designadamente protecção dos solos, ordenamento do território e conservação da natureza. Nos instrumentos de planeamento dos recursos hídricos e gestão territorial, nomeadamente nos planos directores municipais é fundamental a delimitação e zonamento das áreas inundáveis por cheias, correspondente a diferentes frequências de ocorrência, pois constituem a base essencial ao processo de planeamento e ordenamento do território, potenciando a resiliência dos territórios. Como caso de estudo apresenta-se a delimitação das áreas inundáveis (T =100 anos) no concelho de Almeirim.

Palavras-chave: gestão de riscos, resiliência a inundações

LAND PLANNING POLICIES TO IMPROVING THE RESILIENCE OF TERRITORIES TO FLOODING

ABSTRACT: Currently, environmental issues and risks associated with climate change represent a challenge to the resilience of the territories, in particular those that result from extreme hydrological phenomena or potential sea level rising, leading to flooding. While inevitable natural phenomenon, the occurrence of floods can threaten the safety of persons, goods and the environment, so it is essential to reduce the associated risks and consequences and to alleviate the negative effects through mitigating measures (Decreto-Lei n.º 115/2010 of 22 October). On the other hand, omissions in the planning process and pressures in the use of marginal lands have led to more aggravated situations. This framework leads to the necessity of evaluation the effects of flooding, the zoning of endangered lands and the quantification of risks. These aspects act as indicators of potential consequences associated with different flood scenarios, so it is mandatory to establish flood risk management plans, which define protection levels and identify integrated prevention measures, without neglecting environmental issues, protected in the Water Law, including soil protection, land use planning and nature conservation. In the water resources planning and territorial management tools, namely the Municipal Master Plans (PDMs) it is critical the delimitation and zoning of areas prone to flooding, corresponding to different recurrence rates, as the essential basis to the planning process of land use, to enhance the resilience of the territories. As a case study, the delimitation of flooding areas with a return period of 100 years is presented for the municipality of Almeirim.

Keywords: resilience to flooding, risk management

1. Introduction

The risks associated with climate change, including those resulting from extreme hydrological phenomena or the possible mean sea level rise, leading to floods, may put at threat the functional balance of those systems and represent a challenge to the resilience of the territories.

The occurrence of floods, while natural phenomenon, can jeopardize the safety of persons, goods and the environment, so it is essential to reduce the risk and the consequences that are associated, by mitigating negative effects through prevention and mitigating measures (Decreto-Lei n.º 115/2010 of 22 October). On the other hand, omissions in the planning process and pressures for the use of marginal lands have led to more aggravated situations.

In this framework it is necessary to evaluate the effects of floods; for that the areas prone to flooding should be delimitated and the risks must be quantify. These factors are indicators of potential consequences associated with different flood scenarios (high probability, to periodicity less than 100 years; average probability for frequency exceeding 100 years; and, low probability, to extreme phenomena). It is fundamental to establish flood risk management plans, which define levels of protection and prevention, integrated measures identify to mitigate risk, not forgetting the environmental issues secured in the Water Law (Lei n.º 58/2005, of 29 December), including soil protection, land use planning and nature conservation.

The Water Law, in what concerns protective measures against flooding, establishes the duty of delimitation of flood prone areas, vulnerable to floods, in the water resources planning instruments and in territorial management. In a preventive perspective, endangered by floods areas are considered as areas of risk, to be integrated in the National Ecological Reserve, for the mitigation of natural hazards.

This work intends to analyze how concepts such as resilience, risk, vulnerability and mitigation relate themselves, in the context of flood risk management, evaluating simultaneously the role of planning instruments, particularly at the municipal level, in the promotion of resilience of the territories, to extreme water events, and the character of the population adaptive capacity.

In terms of water resources, namely in municipal plans, the delimitation and zoning of flood areas are essential for different frequencies of occurrence, because they are fundamental for the planning and land management process planning, and induce the resilience of the territories. As a case study, the delimitation of flood areas, corresponding to the frequency of occurrence of once in 100 years (return period of 100 years) for the municipality of Almeirim is presented.

The developed map represents the areas potentially subjected to centennial flooding, constituting a fundamental instrument, because it shows a conditioning factor to soil use and occupation. It works as element of consciousness and alert for the population and supports the decision-making process, thus contributing to increase the resilience of the territory of the municipality of Almeirim.

2. Resilience in the context of flood risk management

The resilience being the ability of a system to absorb disturbance and reorganize itself, while subject to adverse requests, keeping the bulk of its functions, structure, identity and mechanisms (Holling, 1973; Walker et al., 2004), it is considered that the planning and land-use management is a tool which allocating the various functions and uses to territorial units, can enhance losses and damage reduction, contributing to risk management and to the consequent increment of its robustness.

The resilient territories while less vulnerable, are more prepared to deal with disruptions and changes, so it is essential to adapt them, as well as frame populations for different scenarios. Adaptability, as component resilience, is one of the factors favouring resilience promotion.

The mitigation of the adverse effects, while risk prevention measure and the reducing the territories' vulnerability to extreme phenomena, such as floods, constitute methods of risk management, which

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should include the analysis of different scenarios of flood incidence (high probability, to periodicity less than 100 years; average probability for frequency exceeding 100 years; and low probability to extreme phenomena).

Resilience, while attribute of a system, manifests itself as a tolerance capacity to a security threshold which is considered critical. Recognizing that threshold, measures and actions can be proposed and established, related by land planning instruments, assessing the distance between the system state and its holding capacity, and then keeping the system in a controlled condition.

It is important to consider on the resilience concept in communities' accommodation to changes and alterations of territories, in a multidisciplinary approach, considering the territory as a complex system susceptible to threats. To adopt an integrated perspective on territorial approaches, involving local communities is the best approach at this scale. This allows a closer approach to the reality and the ability to act in due time and an interaction with agents of different backgrounds (stakeholders); however, this requires a multi-level governance system for effective decision-making.

3. Land planning tools and risk management

Land planning policy is based on a territorial management system organized in three levels – national, regional and municipal - and takes place through a body of action instruments (Lei n.º 48/1998, of 11 August, as amended by Lei n.º 54/2007, of 31 August).

At the national level, the National Programme for Land Planning Policy (Programa Nacional de Política de Ordenamento do Território – PNPOT) defines the model for territorial development of the country, in the long term, considering the risks and vulnerabilities as components of territorial model, giving priority to the prevention and management of risks, pointing to, among others, the risks of floods and inundations. In this framework, the preventive management of risks is considered mandatory in other levels of management, imposing the assessment and prevention of factors and situations of threat, and the implementation of measures to mitigate their effects.

At the regional level the different types of threats are defined and according to the objectives and criteria for each type of plan, the areas of danger, compatible uses, in these areas, and the measures of prevention and mitigation of risks must be identified.

The Municipal Master Plan (Plano Director Municipal – PDM) is a management tool, with binding nature, through which the municipality integrates and articulates the guidelines established by the territorial management instruments of national and regional levels in its development strategy and spatial organization model in the municipality, namely in terms of land-use options, preventing the occupation of areas of greater susceptibility to threats. The PDM is also a reference tool for other municipal plans, and in particular to the urbanization plans and the detail plans.

It should be noted that the administrative boundaries do not restrict the impact of risks, so, the preventive approach, multidisciplinary, must assume supra-municipal character, i.e. at the level of the inter-municipal land-use planning.

Finally, it should be referred that some of the objectives of the National Ecological Reserve (Reserva Ecológica Nacional – REN) (Decreto-Lei n.º 116/2008 of 22 August, as amended by Decreto-Lei n.º 239/2012, of 2 November) is to prevent and reduce flood effects, contributing to adaptation to climate change and for the security of people and goods. Areas threatened by floods, while areas for the prevention of natural risks, are integrated in REN, who has to be delineated in conditioning' maps of the PDMs.

In this framework, it is considered essential to develop municipal flooding maps, because the delineation and zoning of these areas, for different flooding frequencies, constitutes an essential tool for risk management and, consequently, to improve the resilience of the territories to flooding.

4. Case study: municipality of Almeirim

4.1. Study area

For a case study the municipality of Almeirim, with four parishes (Fazendas, Raposa, Benfica do Ribatejo and Almeirim) was adopted, because it is an area in the alluvial plain of the Tagus river with drainage problems and very prone to flooding. Although flooding was a very frequent phenomena in this area recently there is less awareness of the population.

This municipality, with an area of approximately 222 km^2, belongs to the NUT III-Lezíria do Tejo and is part of the catchment area of the river Tagus, covering the sub-basins of the streams ribeira de Muge and vala de Alpiarça (paul or ribeira de Ulme).

The river catchment of ribeira de Muge covers the eastern area of the municipality, including almost all of the parishes of Fazendas and Raposa, having as main tributaries the streams of vale de João Viegas, vale de Figueira, vale das Casas and Calha do Grou.

The watershed of vala de Alpiarça covers much of the parishes of Benfica do Ribatejo Almeirim and a small part of the parish of Fazendas, having as main tributaries the vala do Meio and the streams of Vale da Fonte Moça, Falhão, Vale da Mina and Vale da Pataia.

4.2. Main data

Fieldwork was carried for the study and the information available was collected and analysed. In particular the following elements were used:

- Military maps 1: 25,000 scale, from Instituto Geográfico do Exército;
- Topographic maps 1: 10,000 scale;
- Master plan for Tejo's river catchment;
- Management plan for Tejo's river catchment;
- Rainfall and hydrometric data;
- Corine Land Cover maps;
- Geological and soil cover maps;
- Survey of water courses, flood marks, land occupation, geomorphological, soil and topographic characteristics in the municipality.

4.3. Methodology used for the delineation of flooding areas

The analysis of hydrological conditions was made considering the different characteristics of the zones of the municipality of Almeirim. The type of occupation of the territory, the geomorphologic features, topographic and soil characteristics of the municipality and the information available about flooding (records of historical events) were considered.

The modeling of the flow conditions were simulated using one-dimensional model, HEC-RAS (US Army Corps of Engineers, 2010), for variable regime, based on the estimated flow discharges for a return period of 100 years, the corresponding hydrographs, the digital terrain model and, as boundary conditions, the water levels of 12.16 and 9.97 m (water levels for the flood of 1979, respectively in Porto da Courela and Benfica do Ribatejo).

For the validation of the results obtained with this simulation, a comparison was made with the flooding marks. For the delimitation of areas threatened by flooding the most unfavourable water levels resulting from the comparison of model results with maximum water levels, registered in 1979, were adopted (Tapada - 12.07 m; Almeirim - 11.87 m; Mouchão de Santa Marta - 9.98 m).

4.4. Flooding area map for the municipality of Almeirim

In Figure 1, the delimitation of the areas threatened by floods, for the municipality of Almeirim, is represented in pink.

The analysis of Figure 1 shows that the flood areas in the municipality of Almeirim focus essentially on lowland zone, located between the vala de Alpiarça and the Tagus river, where the land is almost flat, and the alluvial valley of ribeira de Muge. These areas occur primarily in rural land, where agriculture is predominantly the land use and where the losses and risks are not as high as it would be in urban areas.

In what concerns human-induced changes, over time, the drainage network has remarkable differences between rural and urban land. In rural areas some of the water courses have suffered significant changes due mainly to stream constriction inherent of pressure from cropland (i.e., the planting of vineyard). In urban space most water courses that flow across the urbanized land were artificialized, and in many reaches they have been covered, increasing locally the frequency of flooding, for periods of intense rain showers.

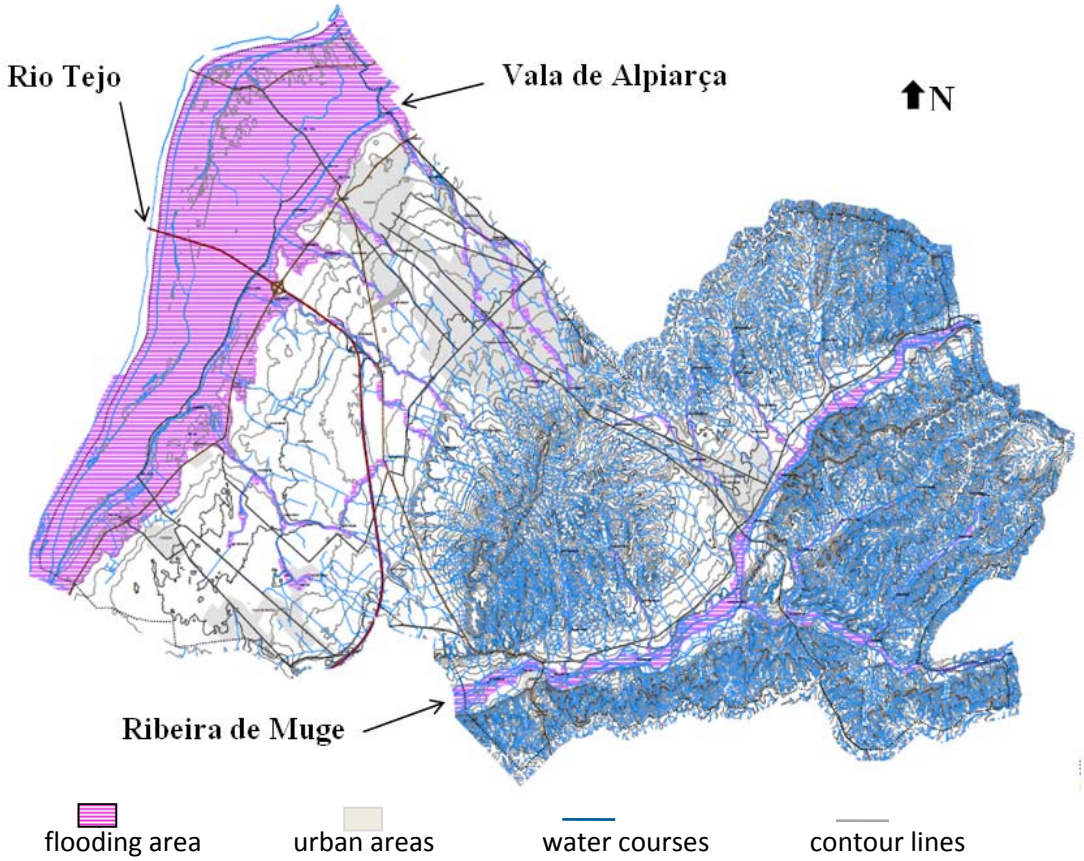

Figure 1: Flooding area map for the municipality of Almeirim

5. Discussion and final remarks

The mapping of flood areas is considered crucial at municipality level, because the delineation and zoning of flooding areas, for different return periods, constitutes an basic tool in the process of land use planning, as it represents a limitation factor to soil use and occupation. It works, also, as a sign of awareness and warning to the population, and as a tool for risk management and support of the decision-making process, thus contributing to the increase the resilience to flooding.

Assessing a critical resilience threshold, in a territory, while a complex system and susceptible to threats, can lead to the establishment of measures and actions, framed to land planning tools. This

threshold provides a measure of the difference between resilience, while a system attribute to support impacts, and its own holding capacity, ensuring it greater vulnerability and preparedness to cope with disruptions and changes.

It should be noted that the major constraints on the water courses are the result of adjacent land use pressures, both in rural or urban areas, designed primarily to provide larger space for occupation by different uses and that, and that the covering of water courses, in urban areas, lead to decrease the resilience of the territory, for flooding events.

Land planning approaches must present an integrated and multidisciplinary nature, involving local communities, because it is the level that best meets its reality, provides greater opportunity to act and which is closer to agents of different kinds (stakeholders). The process must be also associated with a system of multi-level governance of effective decision-making.

In the study case the flood areas occur mainly in rural land, predominantly with agriculture and the potential losses and risks are not as high as it would be in urban areas. The human-induced changes, over time, created remarkable differences in the drainage network for rural and urban land.

As, in rural areas some water courses suffered significant constriction, inherent of pressure from cropland, in urban space a high degree of artificiality is observed, and even in some drainage reaches the channels were covered, leading to greater frequency of flooding and decreasing resilience.

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GOVERNANCE AND SUSTAINABLE DEVELOPMENT: BUILDING CAPACITY FOR RESILIENCE IN THE CITIES

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RESUMO: O conceito de resiliência tem sido definido como a capacidade de um sistema absorver perturbações e reorganizar-se quando está sujeito a forças de mudança, mantendo o essencial das suas funções, estrutura, identidade e mecanismos. Embora tendo a sua origem na Ecologia, nos sistemas sociais aplica-se à capacidade de antecipar e planear para o futuro para mais facilmente resistir a ameaças e choques. Aplicada aos sistemas sociais complexos, a capacidade de organização necessária para se adaptarem às perturbações, exige mecanismos de governança, de modo a garantir a resiliência, mas também, assegurar o seu desenvolvimento futuro. Um dos objetivos desta comunicação consiste em demonstrar que um bom sistema de governança é uma condição essencial para que o desenvolvimento dos territórios que seja simultaneamente sustentável e resiliente, procurando sistematizar as abordagens teóricas que os fundamentam. A campanha da ONU (2010) "Construir Cidades mais Resilientes: A minha Cidade Prepara-se para 2010-2015", tem como objetivo focar a atenção dos governantes para o aumento do risco nas zonas urbanas face a diferentes tipos de ameaças. Em Portugal há quatro municípios que são reconhecidos como Cidades Resilientes por este programa mas, o número dos que pertencem a redes internacionais com vista ao desenvolvimento sustentável e à partilha boas práticas de governança é crescente. Assim, outro objetivo deste estudo centra-se em apresentar um referencial para a atuação pública orientada para a previsão e redução dos riscos mas, inserida nas respetivas estratégias de desenvolvimento sustentável e assente em sistemas de governança adaptativa que encoraja a criação de parcerias estratégicas e o envolvimento dos stakeholders.

Palavras-chave: Desenvolvimento, Governança, Riscos, Resiliência, Sustentabilidade

ABSTRACT: The concept of resilience has been defined as the capacity of a system to incorporate and reorganize itself when subject to external forces for change, keeping its essential functions, structure, identity and mechanisms. Although this concept was originated in Ecology, within social systems, it has been applied to the capacity to anticipate and plan for the future in order to resist more easily to threats and shocks, assuming learning systems. Applied to complex social systems, the capacity of actors to re-organize in order to adapt to external threats requires governance mechanisms to ensure resilience but also to support future development. One of the aims of the present paper is to show that a good governance system is an essential condition for a sustainable and resilient local development, attempting at the systematization and integration of the underlying theoretical approaches. The UN 2010 campaign “Building More Resilient Cities: My City is Preparing for 2010-15” had the advantage of alerting national governments to the higher diverse risks that cities are facing. In Portugal four local governments are recognized as resilient cities by this program but the number of municipalities that have joined international networks and programs for sustainable development and good governance is increasing. Another aim of this study is centered on the presentation of a conceptual framework for public policies based on the prediction and reduction of risks but interconnected with the local sustainable development strategies and the local systems of adaptive governance which encourage strategic partnerships and the involvement of stakeholders.

Keywords: Development, governance, risks, resilience, sustainability

1. Introduction

The concept of resilience was introduced in scientific research by Holling (1973) who defined it as the capacity of an ecosystem of persisting in its initial state or returning to it in face of perturbation of its

environment. However the system may, instead, return to an equilibrium which may not be the initial state and this issue has been developed in the area of mathematical dynamic systems (for ex., Kuznetsov, 1998 and more recently Scheffer, 2009). Some definitions emphasize that resilient systems are those that reorganize themselves when subject to forces of change, while keeping the core of its functions, structure, identity and mechanisms (Walker *et al.,* 2004). The recognition that the actors of a system have the capacity to influence its resilience by using knowledge to enable adaption and transformation, allows the application of the concept to a broader field.

Therefore, the concept of resilience was imported from exact sciences but has been used in the analysis of various sorts of systems: ecosystem, human and social, which are interdependent and may be studied from different, complementary, perspectives: (a) as the amount of perturbation that the system can stand, keeping the same structure or state; (b) as the degree of auto-reorganization that a system shows (*versus* the lack of organization or the organization pressed by external factors); (3) as the ability of the system to build and augment its capacity for learning adaptation. Henceforth, resilience implies persistence, adaptability and transformability.

One can say that a resilient system will have the capacity to anticipate, answer and recover from crises and perturbations, avoiding rupture or collapse. One can think about the resilience of victims after an accident, of an habitat after a fire, of a city affected by a tsunami, of a region affected by industrial decay and unemployment or of a country suffering from international turmoil and financial crisis. All of those applications of resilience are relevant, and underneath them there is a systemic approach, according to which a system and its subsystems are dynamic realities that interact among them and with their external environment in constant change and have the capacity to reorganize and learn from experiencing.

Applied to social complex systems, the capacity of organizations to respond successfully to a shock, requires governance mechanisms to ensure, not only resilience (surviving through adversity) but also its future development. Hollnagel (2004) suggests functional models to understand complex socio-technical systems. His approach is based on the assumption that systems cannot be decomposed in parts, because they are nonlinear, as the feed-back effects between the social and the ecological systems are interdependent - which determine its dynamics.

This brief introduction to this thematic shows that the study of resilience is a challenge, having emerged as an aim of public policies, being inherent to good governance. In this sense, in the perspective of the spatial implantation of populations, resilient territories are territories less vulnerable and better prepared to face change and the complexity of threats, either in a situation of natural disaster, or of social and economic crisis. A good system of governance is an essential condition to the success of public policies, hence, of those aimed at the resilience of populations, economies and territories. The collective challenge consists in thinking, preparing and adapting our territories and populations to different scenarios of change, contributing to minimize risks and impacts that impair the living of citizens, families, firms and institutions. Therefore, governance has to include some form of risk management.

In this paper, we aim at a systematization of the theoretical contributions to this topic, trying to study how resilience can be integrated with sustainable development in its various dimensions: economic, social, environmental, political.

Our analysis is focused upon the social and political dimensions, in their connection with public local governance; given the transversal nature of both the problems and the answers, territorial resilience will only be successful through coordinated actions among the several actors. Another aim is to devise indicators that may be used to evaluate the national policy efforts towards the increase in resilience, as one of the vectors of sustainable public policies at the local and regional levels, compared to other countries. One of the contributions is to suggest a matrix of development factors that incorporate and relate the various dimensions and instruments of sustainable development with those of resilience.

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2. Resilence and sustainable development

The present context of financial crisis plus the perception of an increased vulnerability to various risks, has given more relevance to the study of resilience and its application to the strategic options of a country, region or a city. Henceforth, its inevitable association with strategies of sustainable development and public governance, both are essential to the increase in the welfare of communities which requires the assurance of people´safety and health through the prevention of disasters and other risks, and the involvement of individuals in the reinforcement of a culture of environmental protection.

At the global level, and also in Portugal, there is an increasing concentration of people in urban areas, by the year 2050 will represent around 75% of the world population. It is in the cities that commercial and industrial activities are concentrated, as well as the decision centres, services, equipment and critical infrastructures, including technological networks, such as the information and communication networks. Therefore, cities have become a priority in terms of territorial planning and management. Cities are complex systems with multiple components which interact in such a way that may turn a small perturbation into a great disruptive impact.

Given that threats and challenges to urban areas are increasing, prevention and risk management should be part of development strategies in order to increase territorial resilience, an issue that has been receiving great attention from international organizations and national governments. In this context, the UN launched the 2010 campaign "Making Cities Resilient", with the aim to focus governments´attention, especially at local level, on the issue of urban risk in the face of different types of threats, which tend to become more diversified complex and sophisticated.

Disaster Risk Reduction (DRR-), according to UN, is an integrant part of economic and social development. Sustainable development requires that the risks of natural disasters and population vulnerability be incorporated in development plans. Besides, the UN aims at helping political leaders and legislators to pursue one of their greatest responsibilities which is protecting their citizens from risks. Meetings have been promoted and organized to make national authorities understand that risk prevention is an instrument for the prosecution of Millenium Development Goals (UNISDR, 2013).

Other organizations have also promoted development through networking and the elaboration of annual reports which serve as a basis for ranking countries and cities according to their performance. Corporate Knights[1] publishes a ranking of sustainable countries. The ordinal position of each country depends upon a weighted average of 25 indicators which are listed in Appendix 1,

Table 1 shows the ranking of the 39 countries studied, where Portugal comes on the 28th position with 39,8% against 76,3% from Sweden ranking in the 1st position.

TABLE 1- RANKING OF SUSTAINABLE COUNTRIES

RANK	COUNTRY	SCORE
1	Sweden	76.8%
2	Norway	74.2%
3	Finland	69.6%
4	Denmark	67.5%
5	Switzerland	66.6%
6	Austria	65.4%
7	Japan	63.8%
8	Australia	63.2%
9	Luxembourg	63.0%
10	Netherlands	61.9%
11	Germany	61.7%
12	France	60.7%
13	Belgium	60.1%

[1] Disponível em http\www.corporateknights.com.

14	Korea, Rep.	59.9%
15	Canada	56.2%
16	Ireland	55.4%
17	Iceland	54.5%
18	New Zealand	53.2%
19	Spain	52.8%
20	United Kingdom	51.3%
21	Slovenia	49.9%
22	United States	46.9%
23	CzechRepublic	46.7%
24	Italy	46.1%
25	Israel	45.2%
26	Estonia	43.8%
27	SlovakRepublic	42%
28	Portugal	39.8%
29	Hungary	38.8%
30	Poland	35.8%
31	Greece	33.6%
32	Chile	31.7%
33	China	30.9%
34	RussianFed.	30.6%
35	Mexico	25%
36	Brazil	21.8%
37	Turkey	21.6%
38	India	20.8%
39	SouthAfrica	15.2%

Source:http:\www.corporateknights.com\report/2013-sustainable-countries-scorecard/ranking-results

Observing the list of indicators (Appendix 1) we can see some aspects relating to the environment, to human capital, intellectual capital, financial capital and also social capital which is associated to some indicators of governance, such as, participation in public decision-making and in policy control (*Transparency and fairness*) and (*Voice and accountability*). There are also some environmental indicators (*natural capital* and *ecological footprint*) but there is none related directly to resilience, which denotes that it has not been considered as an explicit aim of development policies, neither as one of the vectors of sustainability. In the present context of crisis and turmoil at various levels, including environmental risks it is easy to understand that resilience is relevant as a strategic aim of national economies and their own territories. The implementation of the Millennium Development Goals and post-2015 strategies can only be possible on a sustainable basis if it takes into account the analysis of vulnerability of regions and cities and risk sensitivity.

3. Local development strategies and different approaches to risks

At the local level, sustainable development plans are better implemented in cities or in urban jurisdictions. Globally, in order to be recognized as sustainable, a city has to fulfill some standards and criteria – among them, it has to demonstrate the capability to implement programs which aim at energy consumption reduction, environmental protection, promote the green economy and increase the quality of life. There are some rankings of sustainable cities which evaluate their efforts to implement new policies and programs designed to increase sustainability – the ones that score higher in terms of number and/or dimension of projects/ and interventions occupy the top ordinal positions.

In recent years there has been a visible increase in the number of networks, some sponsored by the UN, the EU or other, motivated by the desire to share knowledge and best practices towards the resilience of cities. Such initiatives may have considerable impact in terms of intellectual and social capital capabilities on this emergent area of knowledge and supporting the adoption of public policies in an increasing number of countries. Oliveira (2013) focus on the need to incorporate

strategies of resilience in city planning to account for the risks associated with climatic changes, applying to the case of Lisbon's Municipal Plan (PDM).

The concept of resilience have been applied to various fields, although they may be intertwined as they are related to risks and vulnerability in the following areas: 1) Environment, ecosystems and natural resources; 2) Emergence agencies, natural catastrophes and human disasters; 3) Organizations, firms and economies; 4) Territories and development processes (cities, regions, coastal zones); and other, such as food-chain rupture, floods, industrial decay, and other shocks that may be combined into cascade effects. It is important to consider several scenarios with different probabilities and impacts in order to anticipate problems and test solutions. Therefore, regional and local planning should incorporate those aspects.

The creation of adequate mechanisms of good governance towards sustainable and resilient territories faces several problems. These derive mainly from the fact that territorial management is a complex, multidisciplinary process, which encounters conflictual relationships between the different groups of actors: public authorities at different levels, as well as the stakeholders of public outcomes[2].

In fact, different actors have different aims, points of view and preferences in what concerns public interest. Such differences generate institutional competition and various sorts of antagonism in public policy decision-making. Bettoni (2011) shows contributions from both scholars and practitioners in the fields of regional and local policies. All of them believe that fruitful interaction and articulation between the various levels of public administration and decision is feasible, in spite of some conflicts; empirical studies in various countries/regions of the European Union show that adequate coordination has been successful and can be replicated in policies that involve decision-making at the transnational (EC), national, regional and local levels. Birkmann (2010ª) refers to the interaction of the various actors and of the governance processes in urban areas as a dynamic process that he denominates *adaptive urban governance.* It is adaptive along several dimensions: Scales (multidimensional risks, time scale and functional), Access (to resources and information), Knowledge and Normative (vision, values and priorities).

Another relevant topic emphasized by some authors (among them, Subra, 2011) relates to the thesis that territorial governance is essentially geopolitical. As a matter of fact, interjurisdictional conflicts, and between local authorities and regional/or central government undermine the success of public policies, compromise territorial competition and limit territorial cohesion in the European Union. However, sometimes, and in some circumstances, conflict or competition among actors may, eventually, stimulate innovation and progress. Public governance relates to a democratic view of planning, implementation and control of public actions; given that those processes are decentralized to the various levels of administration and incorporate stakeholders´ participation, they have to be conceived as a complex and intertwined net of social phenomena with a territorial implantation. Therefore, both the sociological and the geopolitical approaches may offer important contributions.

Cooperation between governmental decision levels and information and resource sharing through partnerships with other sectors of activity will become inevitable solutions in the face of scarcity of funds at the national level.

In spite of that, network governance enhances cooperation and resource sharing and stimulates citizens´ participation at national and international levels. For example, ICLEI[3] organizes frequent *webinars* on several topics of resilience of the cities and has published on-line " the White Book on Cities Finance" – it is a demand-driven approach for development, for disaster reduction and for he adaptation to a changing climate and presents interesting ideas on how it is possible to develop capabilities on the various support schemes from central governments and international

[2]Bettoni, G. 2011,Gouverner les territoires: antagonismes et partenariats, Institut De la Gestion Publique www.openedition.org.

[3]ICLEI – http://resilient-cities.iclei.org/resilient-cities-hub-site (accessed 23 Oct. 2013).

organizations, as well as through the creation of entities specialized in finance and special insurance schemes to face risks and partnerships with the private and the social sectors.

The development of technical, institutional and financial capabilities and its integration in cities' planning and governance processes forms part of *re-development*, which, according to the ICLEI Report, aims at: (1) making the reduction of climatic risk and of natural disasters a priority in the planning processes; (2) Developing specialized financial instruments, that are not available in conventional banking and insurance to facilitate the implementation of development projects oriented towards risk reduction; (3) Building capacity at the local level to prepare structures and managing "re-development" in large scale.

Actions towards resilience at the level of risk management, comprehend the following phases: ***anticipation*** **-** requires planning according to multiple scenarios; ***answer*** and ***recovering***. traditionally there is some tendency to focus only on" answer" and "recovering", centered on the intervention of National Agencies for homeland security and emergence ("Protecção Civil" in Portugal). Resilience should enable anticipation of the problems, which imply planning in order to assemble and analyze data and information on past events and monitor some key-indicator, in order to be able to act pro-actively. This is justified by the increasing risks and the coordinated action among civil protection.

For example, the cases of disruption in the supply of electricity or petrol have substantial systemic impacts. This and other scenarios require a contingent planning and the capacity to fine-tuned crisis communication.[4] Creating resilience has also to do with innovation and creativity. We very well know that information and communication technologies have great relevance on performance and on process innovation; there are huge benefits from ICT not yet explored to its full potential - adequate use, management and integration of ICT in enlarged inter-operative systems will be crucial to provide new solutions to problems.

Flin (2006) argues that resilience management capabilities require the analysis and monitorizing of operative signals which may indicate (or measure) the differential between the value of a certain risk factor and a limit-value corresponding to a safety boundary. Resilience management aims at establishing an environment and a culture of pro-active monitoring in what concerns the safety of organizations. Thus, factors that are known to affect safety can be constantly measured and evaluated in order to prevent problems. The fixation of predictive indicators is, therefore, essential to the anticipation of crisis/ disaster. This approach is based on risk management.

On the contrary, the sociological approaches to risks emphasize the social element as being determinant to anticipate, prevent and react to risks. Therefore, it centers its analysis upon the perceptions of risks by communities, arguing that the degree of confidence of individuals in institutions and the capacity to cooperate with them and reorganize are central aspects to create and increase resilience. The next section proceeds with a deeper analysis of the sociological approaches to the resilience of territories and their populations.

4. Community-based solutions for resilience

The sociological approach facilitates the association of resilience with governance, suggesting "community based solutions", which are defined as the solutions that enable communities to adapt to changes and risks, associating the need to adapt to local development strategies - for example, networks such as ICLEI (2013), have undertaken initiatives based upon communities and centered on the identification of vulnerable groups and/or areas with less resources. Their actions are moved by the desire to strengthen urban resilience and the impact of risks and, simultaneously, support socio-economic development. Networks provide information and *fora* where alternative approaches and

[4]ANCP, PROCIV Boletim Mensal-Maio de 2013 www.proteccaocivil.pt

solutions can be discussed and successful risk-reduction programs in one city can be replicated in another[5] (for ex.: Archer, 2013).

In Portugal the *community-based* approach has been used in some studies (Mendes *et al*, 2011) and (Tavares, 2011). They criticize the innumerable research studies that are centered only in the costs of risk reduction and on the operational and technical evaluation of vulnerability to risks. On the contrary, they favour the issues related to citizenship, quality of life and the structural safety of populations. "*The transition of the paradigm of vulnerability to that of resilience leads one to question whether the underlying rationale should imply a transfer of responsibility from the international organizations and governmental authorities to the communities and their citizens*"(Mendes, 2011:1).

This approach has a sociological nature, although it congregates multidisciplinary contributions, since *"the concept of social vulnerability assumes that the social element is the active element in what concerns risks, given that social vulnerability is the predisposition of a certain group to be affected either in physical, economic, political or social terms, in case of occurrence of a disruptive process or action"* (Mendes, 2011: 6*).* Furthermore, he refers that in Portugal, public planning at the national and local levels do not incorporate the analysis of social vulnerability as a tool for the implementation of measures of prevention and alert, neither as a tool to articulate knowledge with the practical experience and culture of communities/citizens. In order to achieve a comprehensive and deeper understanding of territories and their respective needs in what concerns prevention and risk reduction public decision-making should integrate the various spatial scales of public administration. That favours "a better allocation of resources homeland security and emergence, *the use of an adequate legislative and juridical framework to design territorial management strategies, the creation of new standards of safety and the building up of new modes of citizenship" Mendes et al (2011:7).*

Birkmann (2010a) uses the Bogardi, Birkmann and Cardona model (BBC model), which defines vulnerability as resulting from three factors: exposure, susceptibility and capacity of reaction. Then apply that model to the study of the risks of coastal flooding generated by tsunamis and their respective socioeconomic consequences in Cadis (Birkmann (2010b). He concludes that there are no local perceptions of that risk and that organizational and institutional strategies for risk reduction do not include tsunamies. That shows "*the central relevance of the institutional dimension of vulnerability in the design of effective strategies for prevention and preparedness* (Alexander, 2013).

Tavares (2011) evaluates the perceptions of natural and technological risks in continental Portugal and the degree of institutional confidence, using a national opinion poll with a representative sample of Portuguese citizens in each municipal jurisdiction. The results point to low levels of perceptions of risks, particularly in the city of residence, although there are regional differences in perceptions. The study shows a high level of confidence in institutions and organisms related to emergence and help as well as a positive evaluation for risk communication agents. In general, such studies emphasize the adaptive capacity of citizens to resilient practices and to standards of safety.

In our opinion, the community-based approach has gained an increasing support in the literature and has also contributed to some change in the paradigm that has underlined international organizations programs. So, one should raise the following question:

"Can international organizations play a relevant role in promoting community based strategies? Or are we talking of totally different perspectives?"

There seems to be a tendency for the convergence of both approaches, although they are, undoubtedly, rooted in different ideological rationales. In fact, the aims and design of the United Nations development strategy for the post-2015 reveals a slightly different approach from the previous one, as we shall try to expose. The general framework for the intervention of UN since 2005 was already grounded on the importance of good governance on the part of national governments,

[5]Archer (2013) and Wajih (2013), for example.

while the mission of international organizations was not only to provide financial support but, essentially, to define a global strategy and provide adequate guidance for the actions of public entities *in prol* of disaster reduction. The identification of good practices and instruments applied in different countries was the aim of the Guide on "Resilient Cities: Guide for Local Authorities. Published on November 2012, by the UN Cabinet for the Reduction of Catastrophes in the context of the global campaign "Building More Resilient Ciyies: My City is Prepared for 2010-2015", which follows the Hyogo Framework For Action (2005-2015), approved by the General Assembly of the United Nations in 2005 - aimed at defining strategies of risk reduction and the development of resilience of nations and communities (United Nations, 2013). This Campaign appeals to local public representatives and public policy stakeholders, as a kind of "global network" for sharing innovative processes and interventions, presenting policy solutions, and suggesting the use of a common "package of tools" to assess citizens needs and perceptions on risks and safety (such as, questionnaires, actions in schools, flyers and posters).

Following Hyogo´s Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, the UN (UN system task team on the post-2015 UN development agenda) has presented another document, which is a second think-piece on the theme "Building resilience to disasters through partnerships", intended to orient discussion on the post-2015 development agenda. The document outlines the *modus operandi* of the International Strategy for Disaster Reduction announcing that the UN will work as a partner, contributing to "empower stakeholders to build partnerships and political legitimacy for international agreements in the context of disaster risk reduction". With this approach the paper refers to the directions outlined in the Hyogo Framework for Action:

1) localization of policies;
2) promotion of partnerships for risk reduction;
3) building the ability to influence and guide diverse groups and generate partnerships amongst a wide variety of stakeholders (not just central governmental organizations) including local authorities, science and technology institutions, parliamentarians, interest groups and community practitioners, the private sector, and media.

To conclude, we think that this international strategy may be regarded as an application of democratic and participative governance and respects community-based perspectives and options. It is, partly, the result of the failure of the Millennium Goals Strategy in reducing poverty and income distribution inequality worldwide and the realization that development, in order to be sustainable, requires increase in resilience and has to rely on community-based approaches.

The Action Guide suggests practical orientations through the operationalization of the "Ten Essential Steps to Build Resilient Cities". In Portugal, four local councils have adopted this guidance and are recognized as Resilient Cities: Lisboa, Amadora, Cascais and Funchal. After analysis of the information and actions related to this campaign through the web sites of these cities, it seemed to us that Amadora shows a greater determination, given the number of documents ready to download, the questionnaires and seminars undertaken, among other events. We note the actions and information provided by the organizations in charge of homeland security and emergency in Portugal (*Protecção Civil*) that have also supported this campaign and have networked with similar international institutions (ANPC, 2013).

Other initiatives towards resilience at the international level, although, of non-governmental nature, have increased; we refer only some:

(a) ICLEI - *Local Governments for Sustainability* – a network aimed at sharing experience, providing information and tehnical support on urban planning, and eventual financial support, to local authorities and local communities which are most determined to progress on resilience issues.

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(b) Rockefeller Foundation- launched the Challenge "100 Resilient Cities", aimed at selecting 100 cities which register better programs to provide solutions to the most vulnerable groups of their populations. The 100 cities will receive financial support to help creating urban resilience and preparedness in the 21st century and form the Network *100 Resilientes Cities* [6].

(c) ECO XXI[7] is another network which gathers around 32 Portuguese local councils in 2013. It is intended at the identification and recognition of good practices in the field of sustainable development undertaken at the municipal level. It favours some vectors that are assumed to be essential for sustainability: educating for sustainability and environmental quality. It ranks local authorities according to their performance along 21 indicators of local sustainability, similar to the ones listed in Appendix 1, related to: Environmental education; Civil society and citizenship; Institutions; Nature conservation; and quality of air and water; energy, mobility, tourism, agriculture and territorial management.

Many more networks have been created, which reveal an increasing awareness from local authorities and communities in the issues of sustainability and resilience. Note that, most of those initiatives are indebted to the support provided by international organizations such as the UN and the E. Commission and their promotion of networking and partnership as criteria for project selection in the context of financial support.

At the national governments level, many countries have already started reorganizing homeland security and emergence systems, incorporating risk planning and management plans articulated with local authorities and communities. In the USA, the Federal Emergence Management Agency (FEMA) created a Federal Insurance and Mitigation Administration (FIMA) that works with communities across the Nation to help them analyze risks and prioritize their mitigation activities. FEMA's hazard mitigation grant programs, building science expertise and even flood insurance program assists community leaders in their efforts to ensure better disaster resiliency. "*All the knowledge, all the planning, all the experience only matter when put into action. More than 20,500 communities, working together with State and local agencies, actively manage their flood risk with flood hazard maps. More than 5.6 million Americans protect their homes and families from financial loss with insurance from the National Flood Insurance Program. Communities nationwide enforce strong hazard-resistant building code regulations and follow comprehensive hazard mitigation plans to guide development. That's mitigation in action. That's mitigation at work* (FEMA, 2013).

Therefore, in a quite humble attempt to contribute to the systematization of the literature, we have taken elements from the various approaches analyzed in this paper and related them in a framework where resilience may be incorporated in the dimensions of sustainable development and summed up in a matrix (Table 2). We have associated the various elements, instruments and stages of public action towards resilience with the four dimensions of sustainable development and insert them according to political, social, economic and environmental impacts. Governance is circumscribed to "social" dimension (column), in what concerns stakeholders and community-based issues, but also the "political" dimension (governmental policies). Given the impossibility in including all the relevant elements, the matrix is filled only with the most relevant topics/ elements or instruments, to illustrate a comprehensive and integrated approach of sustainability and resilience.

[6] http://www.pagina22.com.br/index.php/2013/09/desafio-100-cidades.

[7] http://ecoxxi.abae.pt

Quadro 2 - Matrix of sustainable development and resilience

SUSTAINABLE DEVELOPMENT / **RESILIENCE**	POLITICAL	ECONOMIC	SOCIAL (governance)	ENVIRONMEN-TAL
RISK Analysis *Diagnosis (operational signals)* ↓ ***Anticipation***	*- democratic participative Governance;* *-Descentraliza-tion* *-Risk Sensitivity*	*Economic Activ. minimize tecnological and environmental Risks* *- monitorization of risks; indicators*	*-Rik as a social phenomenon* *-risks Perception* *- culture of risk prevention*	*-Analysis of environmental Risks* *-Studies* *-programs*
Studies of VULNERABILITY =>planning to increase resilience	*-Strategies and plans of national and territorial development that integrate risks* *- institutional articulation*	*-balanced sectorial growth* *-innovation and competition* *- renewable energy.*	*- participation of stakeholders;* *- community dynamics* *- vulnerable groups* *- urban plans*	*- vulnerable regions and coastal areas* *- plans of Environm. Risk management*
RISK REDUCTION: ➔ ***Answer*** *Public Policies* *Adaptative strategies*	*- Policy Coordination (re-development)* *-> gov. levels* -> scales *-> international cooperation* *- crises manag.*	*-re-development regional & local* *- urban reabilitation;* *- industry/ building =>reduce risks =>green economy*	*- international Networks* *-participation of stakeholders* *- pro-active citizenship* *-cooperation* *-conflict management*	*-environm. policies* *- Media* *- internacional treaties*

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	- adaptive governance			
PARTNERSHIPS ***Answer*** ***reparation*** *Adaptation*	*- internacional organizations* *- especialized financing / insurances to face risks*	*-partnerships with private sector and social sector* *- territorial Cohesion Networks*	*- stakeholders groups* *-networks* *-social cohesion* *-community-based solutions*	*-between environmental groups and / cientific and tehcnological institutes*
LEARNING *transformability* ⇩ **=RESILIENCE=**	*- monitorization* *-partnership and debate* *-results and reports :* *➔antecipation; answer/ solutions*	*-good pratices in econ. Activities* *- Sustainable development* *- resilience*	*-good governance* *- Hyogo Guide* - capabilities in Social capital *-solutions* *-adaptative* communities	*-Nacional/ internacional Fora* *-Education for environ. protection* *resilient environment*

5. Conclusions and future research

Along the four sections of this paper we think that we have accomplished the aims we stated in the introduction. We started with a brief introduction to the topic of resilience, showing how it has been applied to the field of territorial management and development. Given the complexity of this thematic, we hope we have contributed to the literature by surveying some of the approaches, focusing on some empirical studies for Portugal. The transition of the global and national strategies (and also of the literature) from a perspective of "development" towards "resilience" is not only due to the increase in global risks but also to the need to incorporate participative governance and adjust to a scenario of predicted lower average levels of growth in GDP at both the world and country levels in the following years. Nevertheless, on theoretical grounds, there is not a contradiction between the perspectives of sustainability and resilience but there is, really, a change of focus in policy priorities from "growth in a stable environment" to "resilience in an unstable environment".

We argued that there is a tendency for convergence between the UN strategies to development and resilience and the community-based approaches, particularly for the post-2015 strategies, where greater relevance is given to networking, good governance and partnerships at all scales of public decision-making and with stakeholder groups. Furthermore, we found that policies towards resilience may be incorporated into a framework for sustainable development, having in common some dimensions, particularly the environmental and the social, with relevance for governance mechanisms and community-based actions. This topic has potential for empirical analysis and we hope to revisit it again in future research.

APPENDIX 1

Index of sustainable development (indicators)

STATE OF INPUTS: how efficiently are factors of production being employed

Natural Capital indicators:

1. GDP USD/GHG emissions
2. GDP USD/Total energy consumption
3. % Renewable energy (excluding Hydro)
4. GDP USD/Total water use

Human Capital indicators:

1. Occupational injuries/Labour force
2. Occupational fatalities/Labour force
3. Unemployment rate
4. Education expenditure/GDP

Intellectual Capital indicators:

1. Patents filed per unit of labour force
2. R&D Expenditure/GDP

Manufactured Capital indicators:

1. Gross Capital Formation/GDP

Social Capital indicators:

1. Rule of law
2. Voice and accountability
3. Regulatory quality

STATE OF OUTCOMES

Financial Capital indicators:
1. Current account balance/GDP
2. National debt/GDP

Consumption indicators:
1. Household final consumption expenditure

Ecological footprint:
1. Natural resources depletion

Savings:
1. Gross national savings/GDP

Income distribution:
1. Gini

Health:
1. Life expectancy

Quality of life:
1. Urban air pollution

Educational attainment:
1. Tertiary enrollment rates

Equality:
1. Gender inequality index

Transparency and fairness:
1. Transparency index

Source: www.corporateknights.org

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THE EFFECT OF VARIETY ON REGIONAL ECONOMIC RESILIENCE: EVIDENCES FROM FRENCH METROPOLITAN REGIONS

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OS EFEITOS DA DIVERSIFICAÇÃO SOBRE A RESILIÊNCIA ECONÓMICA REGIONAL: EVIDÊNCIAS NAS REGIÕES DA FRANÇA METROPOLITANA

RESUMO: Quais têm sido os impactos da crise económica e da recessão de 2008/2010 sobre vinte e duas regiões metropolitanas de França? Com base nos conceitos de resiliência económica regional e de variedade relacionada e não-relacionada, este artigo avalia a hipótese de Frenken (2007) no âmbito das condições da crise sistémica da procura, tais como as criadas pela crise económica e pela recessão de 2008/2010: são as regiões caracterizadas por um tecido industrial relacionado mais afectadas pelo desemprego do que as que possuem uma estrutura económica caracterizada por sectores não-relacionados? Do ponto de vista teórico, o artigo propõe uma análise pela qual as estruturas económicas regionais caracterizadas por indústrias relacionadas são mais resilientes do que as marcadas pela presença de sectores não-relacionados. Com efeito, provas empíricas indicam a existência de uma ligação entre a variedade não-relacionada e o aumento do desemprego, de acordo com a suposição de Frenken - regiões caracterizadas por indústrias não-relacionadas são mais resilientes do que as que possuem uma estrutura económica composta por sectores relacionados. O artigo estrutura-se a partir de uma revisão da bibliografia sobre a resiliência económica regional e a variedade relacionada, de seguida descreve a metodologia e os resultados da análise estatística. Com base nesses resultados, fornece uma interpretação dos impactos da crise económica e da recessão de 2008/2010 sobre vinte e duas regiões metropolitanas de França.

Palavras-chave: Crise económica e recessão, desemprego, variedade relacionada e não relacionada, resiliência económica regional.

THE EFFECTS OF VARIETY ON REGIONAL ECONOMIC RESILIENCE: EVIDENCES FROM FRENCH METROPOLITAN REGIONS

ABSTRACT: What have been the impacts of the 2008-2010 economic crisis and downturn on the 22 French metropolitan regions? Starting from the concepts of regional economic resilience, related and unrelated variety, this paper tests the hypothesis made by Frenken (2007) under systemic demand shock conditions as those provided by the 2008-2010 economic crisis and downturn: are regions characterised by related industries more affected in terms of unemployment than regions having an economic structure composed by unrelated sectors? From a theoretical point of view, the paper suggests that regional economic structures composed by unrelated sectors should be more resilient than those composed by related sectors. Indeed, empirical evidences indicate that a negative association between unrelated variety and unemployment growth exists, as per Frenken's assumption – regions characterized by unrelated industries are more economic resilient than those having an economic structure composed by related sectors. The paper is structured as follows: after a review of the literature on regional economic resilience, related and unrelated variety, we will describe our methodology and the results of the statistical analysis. Finally, starting from our results, we will provide an interpretation of the impacts of the 2008-2010 economic crisis and downturn on the 22 French metropolitan regions.

Keywords: Economic crisis and downturn, regional economic resilience, unemployment, related and unrelated variety

1. Introduction

Since the late 1940s, the regional science has increasingly gained notoriety in both academic and professional worlds. In that broad context, the 2008-2010 economic crisis and downturn has called the attention on "the differential and uneven ability of places to react, respond and cope with uncertain, volatile and rapid change" (Pike et al., 2010, 59). Thus, the notion of resilience, especially applied at regional scale, is at the forefront of the discussions in the domain of local and regional development, the interest being to understand how economies and communities cope with and adapt to major shocks and perturbations (i.e. the special issue of *Cambridge Journal of Regions, Economic and Society*, 2012). Nonetheless, the term of regional economic resilience is still characterised by "multiple conceptualisations and limited theorization" (Pike et al., 2010, 59) - especially because the word resilience can acquire different senses depending on the field of study (Hassink, 2010; Maru, 2010). In fact, despite its popularity, that notion still suffers from a lack of theoretical conceptualisation and a relative amount of empirical evidences. For instance, even though scholars have theoretically formalised the link between variety and regional resilience, empirical evidences are not yet available. And, notwithstanding the amount of empirical evidences on the effects of variety on growth (see for example Glaeser et al. 1991; Frenken et al. 2007; Boschma, Iammarino, 2007; Boschma et al. 2010;), no one has already measured the effects of variety on the process of adaptation to changing circumstances, hence, on regional resilience.

It appears, thus, that the most of claims concerning that relation are based on the assumption made by Frenken et al. (2007), founded on the Netherlands case: in case of an external asymmetric demand shock, regions characterised by related industries should be more affected in terms of unemployment, than regions having an economic structure composed by unrelated sectors. The point here is that for the period 1996-2002, authors have found that unrelated variety was negatively related with unemployment growth, arguing that "regions with higher unrelated variety experience lower rates of unemployment growth" (Frenken et al., 2007, 695), which means "that the presence of unrelated sectors in a region acts a portfolio against unemployment shocks" (Frenken et al., 2007, 696). However, albeit those "statistically correct" evidences, as far as I know, between 1996-2002 no major economic shock hit neither Netherlands nor Europe. Indeed, over that period Netherlands experienced stable growth. Moreover, even though little demand shocks probably hit one sector rather than another, surely the impact was locally bounded and not systemic as the one we had during the 2008-2010 economic crisis and downturn – history and statistical data offer, nowadays, the opportunity to test such assumption, at large scale.

For all those reasons, it can appear misleading to theorize in absence of data, the risk being to describe a phenomenon or to make a prediction without knowing facts. It's thus evident that in order to explain why certain regions are more resilient than others, one should first test the effects of variety on regional economic resilience, especially under strong and systemic stress conditions as those provided by the 2008-2010 economic crises. Indeed, the aim of this paper is to contribute to the debate on the impact of different kinds of agglomeration economies, exploring in particular the effects of variety on regional economic resilience.

In order to estimate those effects, this analysis concentrates on French metropolitan regions unemployment rates and economic variety between 2001 and 2011. On the one hand, it is expected that differences in regional resilience among French metropolitan regions should be related to qualitative differences in their economic structure and, on the other hand, it tries to test the hypothesis that regions having a high sector variety should be more resilient than those specialized in related sectors. I suggest that there is a negative relationship betwixt the unemployment growth rate and the degree of regional resilience, which varies across regions according to the degree of variety of the regional economy composition.

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2. Theoretical and empirical background

2.1 Thinking about regional resilience from the economic geography perspective

According to Martin (2012), Maru (2010), and Pike et al. (2010), one can distinguish at least three different conceptualisations of resilience – engineering resilience, ecological resilience and adaptive resilience. Engineering resilience focuses on the ability of a system to resist to disturbances as well as on its recovery speed to return to the pre-shock level of performance. Indeed, the system is implicitly assumed to have a single equilibrium level, which has to hold or to get back to after a recession thanks to self-equilibrating forces and adjustments (Simmie, Martin, 2010). A region would be, therefore, called "resilient" if, facing to some stress, it would be able to return back to its pre-perturbation equilibrium state as quickly as it could; vice versa, a less resilient region is one that hit by the same type of shock would take more time to get back to its previous equilibrium state (Pendal et al., 2010).

As noticed by Boschma and Martin (2010), Martin (2012), however, the regional economy is never in equilibrium because changes within its economic structure occur more or less continuously, especially during a crisis. And, through feedback mechanisms, those structural changes may influence the regional degree of resilience vis-à-vis to future recessions.

At best, an evolutionary model based on this conceptualisation of resilience would maintain a regional economic structure stable over time (Simmie, Martin, 2010).

A second interpretation comes from ecology and socio-ecological studies, where systems are presumed to have multiple equilibriums (Holling, 1973). Here, the idea of resilience emphasizes the ability of a system to absorb disturbances without reorganizing (or collapsing) into another structure or evolutionary path - the greater the stress that a system can absorb, the more resilient it is (Pendal et al., 2010). A regional resilient economy would be one that is presumably able to adapt itself successfully over time to different environmental conditions, by resuming or even improving its long-run development path. Conversely, a non-resilient regional economy would be one that is unable to reshape its structure face to changing pressures, which probably would lead to a substantial lowering of its long-run growth trajectory (Simmie, Martin, 2010). Therefore, that expansion of the definition of resilience allows to think about it both in terms of propriety of a system and as a specific evolution process undergoing its transformation (Maru, 2010). According to Simmie and Martin (2010), however, it seems that those conceptions of adaptation and evolution are somehow misleading. Indeed, regional and urban economic systems can never be in equilibrium compared to ecological ones, which may reach a form of stable state.

A third definition of resilience comes from the theory of complex adaptive systems (Boschma, Martin, 2010; Martin, 2012), providing a link between the adaptive capacity of an economy and concepts coming form an evolutionary perspective as, for example, path-dependence (Martin, Sunley 2006; Martin 2009), variety (Frenken et al. 2007), learning regions (Morgan, 1997; Boschma, Lambooy, 1999; OECD, 2001) etc. Regional economy resilient should be seen as the capacity of a regional economy to manage disturbances by adapting its structure over time, the aim being to maintain over time an acceptable level of well-being for its inhabitants (Martin, 2012). Within this framework, variation "plays important roles in the adaptability and robustness of complex systems" (Page, 2011, 21). Indeed, it could be likely that variety influences regional economic resilience and adaptability in different manners.

2.2 Variety and regional economic resilience: looking for a useful theory of adaptation

How variety affecting regional development is a recurrent question in economics, and much ink have been spilled on this subject. Within the vast literature on agglomeration economies, the main question focuses on to what extent regional specialisations or regional diversifications provoke knowledge spillovers and, hence, regional growth. As here we are interested to understand the effects of external economies on regional economic resilience, our discussion concerns three sorts of agglomeration economies: localization economies (Marshall 1890; Arrow,1962; Romer, 1986);

urbanization economies (Duranton, Puga, 2004; Ottaviano, Thisse, 2004); Jacob's (1969) externalities; related and unrelated variety effects (Glaeser et al. 1991; Frenken et al. 2007; Boschma, Iammarino, 2007; Boschma et al. 2010). As empirical studies demonstrate that knowledge spillover effects are usually spatially bounded (Audretsch, Feldman, 1996; Moreno et al., 2005; Rodríguez-Pose, Crescenzi, 2008), due to distance-decay effect, two views are historically opposed: specialisation vs. diversification. On the one hand, tenants of sectoral specialisation stress the idea that firms situated in specialised regions are more able to learn from other firms operating within the same sector. Physical proximity promotes, therefore, transmission of knowledge between firms, which should grow as fast as the cities where such industries are agglomerated (Glaeser et al., 1991). Urbanization economies and Jacob's externalities, on the other hand, support the virtues of a diversified economy. Here, geographical proximity is seen as a key element underlying the transfer of knowledge and technology among sectors. As a consequence, variety and diversification of economic activities co-located in the same area, promote innovation and growth rather than specialisation. Some empirical results from U.S. seem to sustain that view: Glaeser et al. (1991) have showed that cross-fertilization of ideas across different sectors enhance knowledge spillover and growth.

In connection with those arguments, hence, variety *per se* might be seen as a factor reinforcing regional economic resilience. Diversified regional economies should be more prone to cope with disturbances compared to specialized regions. Moreover, because different degrees of variety are associated with differentiated economic effects, it is important to distinguish various forms of variety, especially related and unrelated variety. Thus, in a dynamic perspective, it has been argued that a related variety is needed to create effective connections and, thus, to enhance active interactive learning and innovation, which might be then a support of growth. Indeed, empirical evidences from Netherlands (Frenken et al. 2007), Italy (Boschma, Iammarino, 2007), U.S. (Essletzbichler, 2005) and Spain (Boschma et al. 2010) have positively assessed the impact of related variety on regional growth and, in most (but not all) cases on employment and productivity. Unrelated variety, covering sectors that are not sharing the same cognitive base, is conversely seen as beneficial to regional economies because stabilising them both on the court and long term. For instance, Frenken et al. (2007) have empirically demonstrated that, in the short term, unrelated variety plays as portfolio effect against demand shock; meanwhile, Essletzbichler (2005) has partially enlightened the relation between diversity, stability and adaptability to changing circumstances in the long run.

Despite these insights on the effects of variety on regional economy performance and evolution, however, nobody has already explicitly tried to estimate the link existing betwixt variety and regional economic resilience. As explained above, however, it does not mean that variety *per se* is neither sufficient nor necessary to explain why and how the level of resilient changes from a region to another. Indeed, it is important to differentiate various forms of variety, particularly related and unrelated variety, as well as their economic effects affecting the ability of a regional economy to cope and to adapt to significant external shocks as, for instance, the 2008-2010 economic crisis and downturn. More resilient regions should be those with an economic structure composed by unrelated sectors, allowing spreading the risk of being hit by a shock across sectors (Frenken et al., 2007). Here we want to know to what extent initial qualitative composition of regional economy is associated with resilience to the impacts of the 2008-2010 economic crisis and downturn. Those considerations lead, therefore, to structure research hypothesis around the following statements:

1) *Regional economic resilience varies across regions according to the degree of variety of the regional economic structure*

2) *Regional economic structures composed by unrelated sectors should be more resilient to external perturbations, implying that the degree of regional economic resilience might be positively associated with unrelated variety*

Moreover, from these statements we can also make the following two hypotheses:

H1: there is a negative relationship between the unemployment growth rate and unrelated variety – regional economic structure composed by unrelated sectors might be more able to deal with economic shocks and, hence, more resilient

H2: the unemployment rate is positively associated with related variety - indeed, we can expect that related economic sectors suffer from correlated demand shock

Thus, in order to test these hypotheses, analyses are carried out on the resilience performance of the 22 French metropolitan regions in relation to the 2008-2010 economic crisis and downturn.

3. Methodology

The main contribution to the literature is to test the hypothesis made by Frenken et al. (2007) on the better "absorption of economic shocks" of regions characterised by unrelated sectors within their economic structure through the analysis of ten years time range. As we have seen above, this implies to enlighten the relation between unemployment growth, unrelated and related variety; a quantitative approach has been used to evaluate whether the regional economic resilience varies across regions according to the composition of the economic structure.

3.1 Construction of the database

The database has been constructed on indicators at regional scale, corresponding to the NUTS 2 level, for a period from 2001 to 2011. We use annual data at regional administrative level mainly for two reasons. Firstly, in France, regions have competences in terms of economic development and regional planning. That means that in case of external economic shock, regions can elaborate development policies, based on political choices and in close contact with the central government. Secondly, at lower scale, data are not always available or suffer from interruptions, especially for long time series. Moreover, according with the mainstream usage of the French National Institute of Statistic (INSEE), a geographical breakdown has been operated. Hence, on the 27 administrative regions in total, only the 22 mainland metropolitan regions, which are all situated in Europe, have been used for this study; the remaining 5 overseas regions[8] have been not considered. To sum up, the final dataset contains 22 annual observations for a period of ten years, from 2001 to 2011. All the data are available on the French National Institute of Statistic, apart from the percentage of people with tertiary education, supplied by EUROSTAT.

3.2 Variables

Past studies on related and unrelated variety (i.e. Frenken et al., 2007; Boschma, Iammarino, 2007; Boschma et al. 2010) have always used the annual employment growth as dependent variable. As stated above, however, because we are expecting a different impact of related and unrelated variety on regional economic resilience, therefore, the dependent variable in this study is the annual unemployment growth (UNEMP), measured yearly at regional level (NUTS2), between 2001 and 2011. In other words, we can assume that in case of economic shocks or perturbations unemployment growth should be seen as a measure of energy dissipation, implying that the loss of workers and, consequently, the decrease of GDP are the symptoms of a system reconfiguration and/or adaptation to new situation/constraints.

Moreover, in order to measure the degree of resilience and, hence, variety of French regional economies, according to similar studies, a proxy for assorted economy is calculated. It represents the degree of sector variety at regional scale, for each of the ten years of the dataset, through the number of employees and it is, so far, the most common indicator used in the literature to estimate entropy. Its value has been measured on the base of the French classification of activities (NAF) for three-digit sectors, which represents the only data available at regional scale, throughout ten years. That indicator is given following this formula:

[8] Guadeloupe, Martinique, French Guiana, Mayotte and Réunion.

$$VARIETY = \sum_{i=1}^{N} p_i \log_2 \left(\frac{1}{p_i} \right) \quad (1)$$

Where *pi* corresponds to the share of three-digit sector *i;* the more diversified the regional economic structure is, the higher its value is. From that indicator, two more variables have been created, respectively named related and unrelated variety, For the first, related variety (RELVAR), the aim is to take into account the degree of cognitive proximity between sectors within the same region. One can suppose that economic shocks might systematically hit related sectors through ripple effects. In fact, according to past studies (i.e. Frenken et al., 2007, Boschma, Iammarino, 2007), one can assume that sectors belonging to different one-digit branches are unrelated as their cognitive distance is elevated. Thus, the more important the value of that indicator is, the more a regional economic structure is composed by different sectors, meaning that the existence of unrelated sectors in a region might be acting as a portfolio endowment to protect from unemployment shocks. This implies that in case of economic shocks, regions characterized by high values are more resilient compared to those with lower values. In a concrete manner, the independent variable are constructed as follows.

First, the two digit shares *Pg* is derived by summing the three-digit shares *pi:*

$$P_g = \sum_{i \in S_g} p_i \quad (2)$$

Then, RELVAR is given by:

$$RELVAR = \sum_{g=1}^{G} P_g H_g \quad (3)$$

where, the entropy-weighted sum within each two-digit sector is given by:

$$H_g = \sum_{i \in S_g} \frac{p_i}{P_g} \log_2 \left(\frac{1}{p_i / P_g} \right) \quad (4)$$

The entropy at the one-digit level finally, gives the unrelated variety variable:

$$UNRELVAR = \sum_{j=1}^{N} P_j \log_2 \left(\frac{1}{P_j} \right) \quad (5)$$

where, *pi* corresponds to the share of one-digit sector *i* distribution.

In addition, some control variables are used. Following the above discussion on different types of external agglomeration economies and in line with past studies on related and unrelated variety (i.e. Frenken et al., 2007; Boschma, Iammarino, 2007), a proxy for urbanisation economies (POPDENSITY) representing the population density of each region in terms of inhabitants per squared kilometre from 2001 to 2011, has been taken. Then, as a proxy for the amount of human capital (EDUC) available in each region from 2001 to 2011, we take the percentage of people aged 25-64 years with tertiary education attainment, which is in line with the most of literature studying the link between human capital and regional development (i.e. Gennaioli et al., 2011). Finally, as entrepreneurship is more and more regarded as an important driver of the economic performance (i.e. Cassia, Colombelli, 2007), an indicator for entrepreneurship (ENTR) is taken in order to assess regional

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innovation capability and adaptability to new situations/constraints. It represents the number of new firms created yearly in each region. All those control variables has been log transformed.

3.3 Method of spatial statistical analysis

While other studies on the effects of variety on growth and employment are mostly based on cross-sectional regressions, here, the aim is to follow the same regions over time. Thus, in order to estimate the relationship between unemployment growth and independent variables, especially unrelated and relate variety, panel data methods are used instead of classical cross-sectional ones. On the one hand, panel data analysis are more informative than simple cross-section because they permit to understand dynamics and causality across variables; on the other hand, compared to simple time series aggregates, panel data are more interesting as they offer the possibility of tracking the history of individuals over time. This methodology represents an additional value compared to similar studies concerning the effects of variety (i.e. Frenken et al., 2007; Boschma, Iammarino, 2007). Furthermore, as the approach adopted here for evaluating the degree of regional economic resilience towards variety is somehow innovative, yet clumsy, two particular set of panel data methods have been exploited for consistent and efficient estimation: the fixed effects estimation and the generalized method of moment estimator for dynamic panel data. Indeed, the main reason concerning that choice is related both with the structure of the dataset and the aim of this study. As we have seen above,

this panel dataset is really dynamic because it has a short dimension (T=10) and a large country dimension (N=22) and, hence, T<N. Arellano-Bond estimator was created for dynamic panel dataset. That feature of the dataset, in case of shock, doesn't allow to the country's fixed effect to decrease over time, implying an almost sure correlation betwixt the dependent variable and the error term. Finally, once explained the relationship between outcome and predictors variables, a spatial interpretation of the impacts of the 2008-2010 economic crisis and downturn based on this framework of analysis is provided. In this regard, maps and charts are used.

4. Results

Before anything else, correlations between all independent variables have been calculated in order to avoid multicollinearity, which can potentitally lead to defromed coefficient estimations. Results are showed below in Table 1.

Table 1: Correlations between independents variables

Variables	UNRELVAR	RELVAR	POPDENSITY (log)	EDUC (log)	ENTR (log)
UNRELVAR	1				
RELVAR	0.2063	1			
POPDENSITY	0.1251	-0.2933	1		
EDUC (log)	0.2015	-0.4241	0.5517	1	
ENTR (log)	0.2282	-0.5353	0.6673	0.7764	1

As the values in Table 1 shown, no correlation among variables has been detected, therefore, a set of preliminary estimations was carried out using a fixed effect models. Estimations are summarized in Table 2 (below) and the main findings can be recapitulated as follows:

Model 1 includes only unrelated and relate variety. Solely unrelated variety is significant at 99% and negative associated with unemployment growth of the 22 French metropolitan regions during the period 2001-2011. That finding is in line with our first hypothesis, stating that there is a negative association between unemployment growth and unrelated variety.

Moreover, even though related variety is not significant, its positive sign is really encouraging because we are looking for a positive association betwixt unemployment growth and related variety.

Hence, those results suggest that the more unrelated the economic sectors within a region are, the less unemployment growths up and, hence, the more resilient region might be.

Models 2 and 3, which include population density and education variables, show similar results as in model 1. Once again, those findings seem to support our hypotheses, even if related variety is not significant. Finally, model 4 includes our last variable, entrepreneurship. Surprisingly, all variables are significant at 99%, even though unrelated variety has switched to a positive sign. Moreover the F-test has an extremely low probability value, which can be interpreted as an evidence of a spurious regression; the above suggests either a strong correlation between the depend variable and the error term or a biased effect linked with the values and/or the nature of the entrepreneurship variable. The first is the most likely.

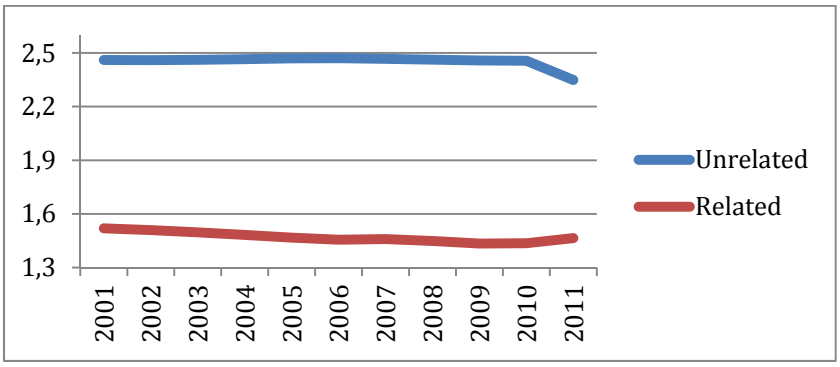
Therefore, it has been decided to run a second set of regressions, this time using the Arellano-Bond's generalized method of moment, from which the entrepreneurship variable has been excluded. Estimations are summarized in Table 3 (below) and the main findings are the follows. Model 5 includes only unrelated and related variety as we did previously in Model 1. Results are, however, different or to be more precise the opposite. Unrelated variety, even though it keeps a negative sign, is not significant. Conversely, related variety is significant at 90% and has a positive sign. Hence, compared to the model 1, these results are even more encouraging. Models 6 and 7 incorporate also the third measurement of external agglomeration economies, the proxy for urbanisation economies (POPDENSITY), and the proxy for human capital (EDUC). Here, three variables out of four are significant at 95%: related variety mantains a positive sign, whilst unrelated variety has a negative one. Furthermore, one observes an important increase of the value of all the variables and both regressions are significant at 99% (Wald Chi2). Indeed, they seem to support both hypoteses (H1 and H2).

Overall, the two methods underline the fact that unrelated variety is negatively associated with unemployment growth, while, related variety is positively associated with it. These results confirm both the hypotheses advanced in the first chapter. However, it is necessary to say that the fixed effects model, in this case, suffers likely from different shortcomings impacting the estimation of the variables' coefficients. The most important concern is the problem of correlation between the dependent variable and the error terms. In fact, through the comparison of these results with those estimated by the Arellano-Bond's generalized method of moment, one can observe completely different values. The second set of regressions, which more probably fits better with the data, coefficients, levels of significance and the tests statistic are more robust compared to those of the first set. Therefore, to sum up, the outcomes of the statistical analysis underline the influence of the qualitative composition of the regional economic structure, which affect the regional unemployment growth rate over time. Therefore, from those results, it can be proposed the following interpretation of the impacts of the 2008-2010 economic crisis and downturn on the French metropolitan regions.

The time series chart below (Figure 1) shows the average evolution of unrelated variety, in bleu, and related variety, in red, between 2001 and 2011 in France. Unrelated variety looks stable over that period, even if it seems slowly declining after 2010, maybe connected with the moment of downturn. Therefore, one can argue that, despite the portofolio effect of unrelated variety, however, certain sectors have been hit by the crisis, implying a relative repercussion on the unemployment. Moreover, the spatial distribution of unrelated sectors varies across regions at different degrees, drawing a new geography of France as shown by figure 2, here below. *La façade Atlantique*, the west regions, are more composed by unrelated sectors (in dark orange) compared to those situated in the middle (in light orange) and Corse, which are less characterized by unrelated sectors. In the middle of these thresholds, there are five more regions[9]. Meanwhile, the average evolution of related variety at national scale is opposed to that of unrelated variety (Figure 1). After 10 years of decrease, relatedness is increasing at the same time when unrelatedness starts decreasing.

[9] Languedoc-Rousillon, and Provence-Alpes-Côte d'Azur, in the South, Franche-Comté and Lorainne, in the East, and Limousin

Figure 1: time series chart of the average evolution of unrelated and related variety in France (2001-2011)



Once more, the degree of relatedness of economic sectors varies across space, hence, drawing its own geography, represented by Figure 3, here below. East regional economies are globally more composed by related sectors than those situated in the South, Île-de-France and Corse.

Figure 2: regional unrelated variety in 2008

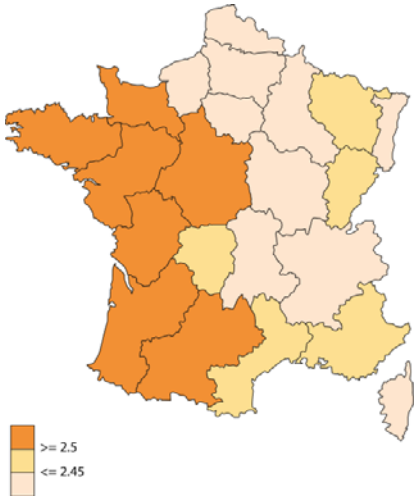
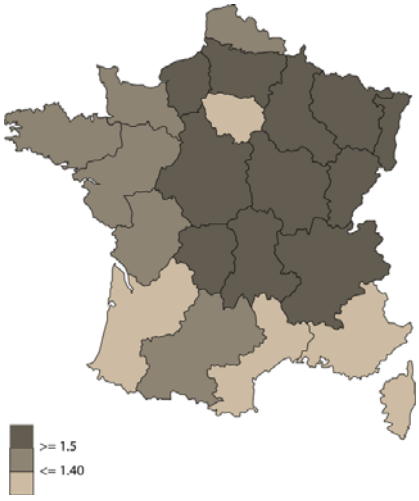


Figure 3: regional related variety in 2008



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Overall, even though certain regions economies appear composed both by related and unrelated sectors, it would be misleading to interpret the regional qualitative economic composition towards that binary category. In fact, by approaching the concept of regional economic resilience from an EEG point of view, it may be more appropriate for thinking of it, and more generally about the spatial organization of the economy, as a particular form of complex adaptive system, where, relatedness and unrelatedness within and across economic sectors exist at the same time, at different degrees, as shown by Figure 1.

Therefore, even though the statistical analysis has estimated that there is a probable negative association between unrelated variety and unemployment growth and a possible positive association between related variety and unemployment growth, it doesn't mean that theoretically this categorization of the economic landscape and structure should be taken as a rule, especially towards a regional economic resilience framework of analysis. It is not neither relatedness nor unrelatdness per se which really matters, but their respective degrees within sectors characterized both by diverse *technological* (learning) *regimes* (Nelson, Winter, 1982; Breschi et. al., 2000) and business cycles (Lucas, 1977). Empirical evidences (i.e. Davezies 2010, 2012; Davies, 2011) seem to support that interpretation: on the one hand, in France regional economies follow specific development paths (Davezies, 2008); on the other hand, the economic crisis has been asymmetrical, hitting certain sectors and, hence, certain regional economies more than others (Insee, 2010).

5. Conclusions

The aim of this study is to explore the relationships between regional economic resilience and different forms of variety, measured at regional level over a 10-year period. The main findings of the paper are quite encouraging and they can be summarized as follows. From a theoretical perspective, we expected that regions having an economic structure composed mostly by unrelated sectors should be more able to cope with economic shock and, thus, more resilient. Conversely, regional economies structured by related sector should be less resilient and, therefore, they might suffer from correlated demand shocks, as those provided by the 2008-2010 economic crisis and downturn. Indeed, the statistical analysis indicates that: it exists a negative relationship between unrelated variety and unemployment growth over time and across regions, verifying the assumption made by Frenken et al. (2007); at the opposite, related variety is positively associated with unemployment growth, even though not in all circumstances.

Furthermore, the methodology used in this study represents an additional value compared to similar studies concerning the effects of variety In fact, this kind of analysis is often based on econometric models that don't allow to take into account the spatial dimensions of human organisations because they are unable to deal with and, consequently, to isolate the effects related to each individual, time invariant characteristics. This analytical framework also underlines an important shortcoming of fixed effects model, related to the correlation between error terms and independent variables. This issue of reversed causality has been managed by applying the Arellano-Bond's generalized method of moment. As a result, however, it can be argued that regional economic resilience partially depends on the qualitative composition of the economic structure. Moreover, results raise a number of challenges for further researches. In fact, as explained above, we've investigated only one aspect of regional economic resilience, which is the capacity to cope with external economic shocks. The other side of regional economic resilience, named adaptability, demands additional researches in order to be better investigated and fully understood. For instance, the quantitative spatial analysis should be integrated by different detailed case studies of the composition of regional economic structure as well as by the analysis of the distribution of public expenditure and cuts, especially at regional scale. Those further insights could potentially contribute to the theoretical definition and specification of the concept of regional economic resilience.

Finally, in terms of public policy, this study underlines an important issue. For those regions where the impact of the crisis has been stronger, policy makers should take into account the qualitative

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composition of the regional economy in order to evaluate what kind of regional growth they are looking for and for whom. For instance, if in the short term the aim is to reabsorb unemployment, public policies should promote specialisation through related sectors. However, in doing this, developers must keep in mind that diversification rests the main strategy to both creating durable economic growth conditions and protecting form economic shocks. Therefore, in medium and long term the aim is to diversify regional economic structures as more as possible.

APPENDIX 1

Fixed effects model results

Fixed Effects Panel Data Model – French Metropolitan Regions

	(A)	(B)	(C)	(D)
unvar	−4.569*** (1.300)	−4.222*** (1.348)	−4.424*** (1.408)	5.636*** (1.221)
relvar	0.293 (0.292)	0.557 (0.399)	0.404 (0.501)	6.310*** (0.548)
popdensity		0.392 (0.404)	0.402 (0.405)	−0.832*** (0.298)
educ			−0.0392 (0.0769)	−0.145*** (0.0546)
entr				0.425*** (0.0302)
Constant	10.85*** (3.277)	7.021 (5.129)	7.853 (5.392)	−22.65*** (4.368)
Observations	220	220	220	220
Adj. R-squared	−0.0160	−0.0163	−0.0202	0.495
Prob>F	0.000995	0.00206	0.00479	3.94e−31

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01
Note: The dependent variable measures the Unemployment growth from year t−1 to year t. Standard errors are heteroskedasticity-robu
> st.

APPENDIX 2

Results for the Arellano-Bond's generalized method of moment

Dynamic panel-data estimation, one-step system GMM – French Metropolitan Regions

	(E)		(F)		(G)	
unvar	−0.504	(0.644)	−2.654**	(1.116)	−2.749**	(1.139)
relvar	0.371*	(0.221)	0.546**	(0.232)	0.620**	(0.285)
popdensity			0.122**	(0.0521)	0.114**	(0.0559)
educ					0.0369	(0.0828)
Constant	0.722	(1.461)	4.952**	(2.313)	4.973**	(2.317)
Observations	220		220		220	
Wald chi2(1)	2.828		5.557		8.546	
Prob>chi2	0.0926		0.0184		0.0139	

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01
Note: The dependent variable measures the Unemployment growth from year t−1 to year t.

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IMPLEMENTING DUI REGIONAL INNOVATION POLICIES: SMART SPECIALIZATION IN A TOURISM-BASED REGION

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IMPLEMENTING DOING-USING-INTERACTING REGIONAL INNOVATION POLICIES: SMART SPECIALIZATION IN A TOURISM-BASED REGION

ABSTRACT: The Science-Technology-Innovation approach might be referred to as an externalised variant of the classic, top-down, internal, research and innovation model first practised in large corporate laboratories. By contrast, the Doing-Using-Interacting (DUI) approach to innovation is not immediate exploitation of laboratory bench knowledge; although some such knowledge may lie behind the known state-of-the-art or even contribute to its furtherance (. DUI involves knowledge recombination among diverse knowledge and practice sets. From a policy implementation perspective, this means thinking of sectors as embodying modules that must be integrated to accelerate regional innovation. This modular approach is increasingly perceived to be the way forward for regional innovation policy. It overcomes the development blockage of sectoral specialisation in silos by rotating recombinative interactions from the vertical into the horizontal (interaction at industry interfaces) to enhance Schumpeterian recombinative innovation. While a consistent refrain has been for less accomplished regions to make up lost ground by developing a stronger S&T infrastructure, thereby exploiting STI's commercial advantage, developed regions are better-placed for this. Accordingly, the STI disadvantaged region may also seek to develop the productive DUI character of its evolving innovation profile. The paper offers case material of hybrid modes of regional innovation policy implementation and the governance strategies to secure this. Particular emphasis is given to the Algarve (Portugal) as a region that the implementation of a smart specialization policy model based in DUI can be helpful to unlock its specialization in 'sun and sand' tourism.

Keywords: DUI mode; Modular approach; Recombination, Regional innovation policies; STI mode.

IMPLEMENTANDO POLÍTICAS REGIONAIS DE INOVAÇÃO FAZER-USAR-INTERAGIR: ESPECIALIZAÇÃO INTELIGENTE NUMA REGIÃO TURÍSTICA

RESUMO: O modo Ciência-Tecnologia-Inovação (CTI) pode ser referida como uma variante externalizada do modelo clássico *top-down* da investigação e inovação praticado em grandes laboratórios corporativos. Por outro lado, o modo DUI (Doing-Using-Interacting) para a inovação não é a exploração imediata do conhecimento do laboratório, embora alguns desses conhecimentos pode estar por trás do estado da arte ou mesmo contribuir para a sua promoção. O modo DUI envolve a recombinação de conhecimentos entre os diversos saberes e práticas. De uma perspectiva de implementação de políticas, isto significa que os sectores são compreendidos como incorporando módulos que devem ser integrados para acelerar a inovação regional. Esta perspectiva modular é cada vez mais acolhida como sendo um dos caminhos para as políticas regionais de inovação ao superar o bloqueio de especialização sectorial através de silos giratórios em interacções recombinativas verticais - interacção nas interfaces da indústria - e horizontais - para aumentar a inovação schumpeteriana. Enquanto o enfoque constante tem sido para as regiões menos avançadas recuperarem o terreno perdido através do desenvolvimento de uma infra-estrutura de C&T mais forte, explorando assim a vantagem comercial da inovação, as regiões desenvolvidas acabam por estar sempre mais bem colocadas para esse desígnio. Assim, uma região desfavorecida em termos de C&T pode também procurar desenvolver a infraestrutura produtiva através do modo DUI no seu perfil de inovação em evolução. O presente texto oferece material com estudos de caso de modelos

híbridos de implementação da política regional de inovação e as estratégias de governança. É dada especial ênfase ao Algarve (Portugal) como uma região em que a implementação de um modelo de política de especialização inteligente baseado em DUI pode ser útil para desbloquear a sua especialização em turismo 'sol e praia'.

Palavras-chave: Abordagem modular; Modo CTI; Modo DUI; Políticas regionais de inovação; Recombinação.

1. Introduction

A result that regional studies probably agree is that regional realities are quite diverse. In European Union (EU), regions that are capable of integrating the global knowledge networks are fewer in number than the ones that are being pushed away by the movement towards the utilization of high-level Science-Technology-Innovation (STI).

The Science-Technology-Innovation mode might be referred to as an externalised variant of the classic, top-down, internal, research and innovation model first practised in large corporate laboratories (Chaminade, Lundvall, Vang-lauridsen, & Joseph, 2010). By contrast, the Doing-Using-Interacting (DUI) approach to innovation is not immediate exploitation of laboratory bench knowledge; although some such knowledge may lie behind the known state-of-the-art or even contribute to its furtherance. DUI involves the knowledge recombination among diverse highly-localized practice sets based on market/user-driven, synthetic and symbolic knowledge, emphasising learning, competence building and organisational innovation (Jensen, Johnson, Lorenz, & Lundvall, 2007).

From a policy implementation perspective, this means thinking of sectors as embodying modules that must be integrated to accelerate regional innovation. This modular approach is increasingly perceived to be the way forward for regional innovation policy. While a consistent refrain has been for less accomplished regions to make up lost ground by developing a stronger S&T infrastructure, thereby exploiting STI's commercial advantages, developed regions are better-placed for this. Accordingly, the STI disadvantaged region may also seek to develop the productive, DUI character of its evolving innovation profile (B. T. Asheim, Boschma, & Cooke, 2011).

In the last year, several regions across Europe have developed their RIS3 - Research and Innovation Strategies for Smart Specialisation (Foray et al., 2012). An evident departing point is that those regions that can really benefit from a science-led 'Smart specialization' strategy are probably limited. So a relevant question to discuss is what to do in less developed or transition regions? Another relevant discussion regards the core of RIS3, the very idea of 'Smart specialization' (Foray, David, & Hall, 2011). 'Smart specialization' supports different principles. It should be an evidence-based strategy on what regions can realistically achieve building on their strengths and existing assets. It should focus and concentrate resources on certain domains of expertise, where R&D and innovation will complement other regional productive assets, avoiding fragmentation and duplication. A 'Smart specialisation' approach should promote the generation of regional ideas, maximising both intra-regional and inter-regional spillovers benefiting from embeddedness and relatedness (Foray et al., 2012). In already highly specialised regions, it is crucial to diversify the economy from the regional 'monoculture'. Stakeholders may understand reinforcing the need to specialize even if in a "smarter" way as a contradictory pathway that sees the main regional deficits as lack of variety within the region.

This article argues that in mixed development regions, also seeking 'interface innovation', S&T knowledge needs to be inserted into a 'praxis' approach. There is no clear model of how to do interactions between DUI or DUI/STI modes of innovation. So, a new model is needed to design and implement regional innovation policy. The paper offers case material of hybrid modes of regional innovation policy implementation and the governance strategies to secure this. The debate is inspired by the set of interviews conducted and work developed to prepare and evaluate the RIS3 in

the Algarve (Portugal). Emphasis is given to the Algarve as a region where the development and implementation of a Smart specialization policy model based in DUI may be helpful to unlock its specialization in 'sun and sand' tourism. The article is organized as follows. A fists section presents briefly the situation of the Algarve region in the design and governance of RIS3. Then a second section presents the Algarve innovation context, showing the current situation of the region, and presenting some of the rationale of the strategy that can be seen as a preliminary approach to DUI-STI interaction policy instrument. The article identifies two areas, Film industry and Healthcare, which could complement 'sun and sand' tourism inducing diversification and related variety among sectors to break the lock-in in the Algarve. The article concludes with policy implications.

2. Smart specialisation or diversification for the Algarve?

Portugal faces currently great economic difficulties in the context of the sovereign debt crisis. The implementation of austerity measures created pressures in the innovation system (Kastrinos, 2013). Nonetheless, this context appears to have caused the main institutional actors in national and regional economic development to adjust attitudes towards the governance of innovation, as is the common aspiration. Partnership, which is clearly emergent in Portuguese multi-level governance arenas, may be seen to be a practical response to crisis, staffing changes and reduced budgets.

Cooperation is also subject of an emergent national governance model on the part of the +E+I Strategic Programme for Entrepreneurship & Innovation (www.ei.gov.pt). This programme was established in 2011 by the previous administration to close the gap between entrepreneurship and innovation in the country. Accordingly, it seeks to assist integration between Portugal's Innovation Agency (AdI), hitherto a freestanding body, and IAPMEI, the National Institute for Support to SMEs & Innovation into which Portugal's Innovation Agency has been absorbed. FCT, the National Research Council, is also bridged by +E+I to IAPMEI and their host ministries. These tend to hope for and welcome a more engaged model of innovation policy with a key role in the policy process being assumed by Portugal's regions.

One of the most striking changes in mentality in the institutional set up of the Algarve and other Portuguese regions, is their discovery and promotion of knowledge-based related variety, as understood by (Frenken, Van Oort, & Verburg, 2007). It is considered a means of both concentrating on fields of excellence and bridging out of core competencies in pursuit of innovation at interfaces with different but neighbouring regional research and application fields. This is particularly true in the already highly specialised tourism region of Algarve to some extent. In the accounts of a wide variety of regional research institutions and industry associations, the explicit message of 'Smart Growth', which is to specialise, has been widely interpreted in both national but also and especially regional innovation institutions as embarking on near future re-setting of targets to explore non-specialist/interdisciplinary opportunities for translational advantage in turning scientific results into innovation.

This may be seen from the responses[10] about attitudes and intentions towards meeting the challenges of promoting 'Smart Growth' through the innovation-led methodology proposed by the European Commission in RIS3 (Foray et al., 2012). One reason for referring to 'Smart Growth' is that virtually none of the institutional views expressed in the regional interviews aspiration to promote regional economic specialisation, whether 'smart' or 'less smart'. This was particularly true in the Algarve where tourism is externally as well as internally assumed its only core economic activity. There is a perception, unlike in more northerly Portuguese regions, that insufficient research and innovation infrastructure building occurred in the previous decade, when elsewhere there was something of a boom in this activity. Accordingly, Algarve seeks to diversify tourism from 'sun and sand' and diversify its economy from tourism.

[10] A dozen interviews and informal meetings in May 2013 to regional Portuguese stakeholders.

To contrast, other Portuguese regions perceive innovation policy quite differently[11]. Innovation policy in Centro involves mainly getting different clusters (e.g. materials and engineering) to talk with each other to identify cross-cluster innovation opportunities. In Norte, because policies from above are resolutely sectoral, policy-makers think it is crucial to find an approach that unites different silos. Especially in Centro and Norte, the development of research infrastructure and internationally-orientated R&D and innovation organisations has entailed a significant maturation of the research system. As it was mentioned in a recent evaluation exercise (Quaternaire Portugal & IESE, 2013), Norte and Centro confirmed their capacity to absorb the ambition, diversity and integration of the panoply of instruments aimed at promoting research, innovation and internationalisation of the present National Strategic Reference Framework (NSRF 2007-2013). Now, it is widely agreed, the time has come to seek to exploit research and innovation further through translational activity that does not enforce ever more specialisation but broadens out S&T gains towards broader DUI platforms. This involves skills development, improvement and expansion of linkages in Pole and Cluster initiatives.

In Algarve, the idea of 'Smart Growth' is seen to be essential, but not in the form of further 'specialisation'. It was noted that previous rounds of fitting in with EU criteria meant a certain fear to invest outside tourism because 'phasing-out' status of the region in 2007-14 created anxiety that there would be less EU investment - even though EU budgets have subsequently remained relatively immune from cuts than national allocations.

Accordingly, central government tourism development focuses most on foreign direct investment (FDI), assuming local SMEs cannot acquire bank funding (a 'one size fits all' approach). Hence, nowadays there is a strong sense that the regional authority (CCDR Algarve) should be more a leader and less a responder in the economic diversification and innovation process[12]. The expectation is that new sectors will grow in relation to tourism. For Algarve, it is mostly a question of helping new industries like marine biotechnology, renewable energy, ICT and creative industries to connect with tourism, with each other, and with partners outside the region. By developing or acquiring knowledge and showing it in diverse knowledge markets this can be done. Two problems need to be tackled for this aspiration: overcoming inter-SME individualism and promoting co-operation; and improving multi-level governance relationships with the national and EU levels.

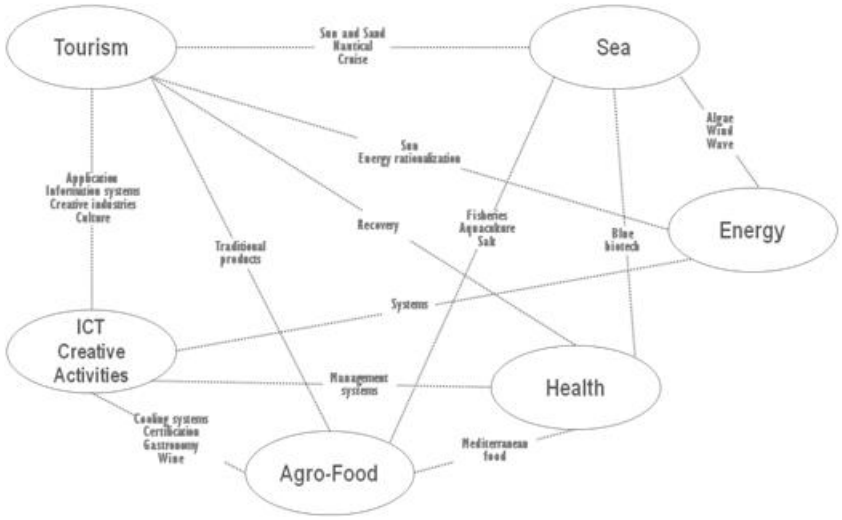
Algarve regional authority feel the region suffered compared to other Portuguese regions in the past. This is partly a national 'bias' where external decision-makers do not see beyond 'sun and sand' as the Algarve staple economic activity. Smart specialization preliminary regional strategy (Guerreiro et al, 2013) advocates to explore related variety opportunities in Health tourism, Cultural tourism and renewable energy in relation to tourism, amongst others (Figure 1). The Algarve's vision for its regional innovation departs from the 2007's PRIAlgarve - Regional Innovation Plan (UAlg, 2007) that identified six key sectors, half established and half emergent. The former consisted of Agro-food, Fisheries and Aquaculture, and Tourism; the latter and emergent ones were Energy, Health, and ICT.

The point about 'emergence' is that the theory for which rests solely upon the central idea that innovation comes from recombination of (in science) molecules and (in social science) modules is extremely important to understand in envisioning a different future for Algarve. It means that RIS3 departs from PRIAlgarve in thinking of sectors as modules that must be integrated to accelerate regional innovation. This modular approach is increasingly perceived to be the way forward for regional innovation policy (Henderson and Clark, 1990; Sturgeon, 2002; Gawer, 2009). This overcomes the development blockage of sectoral specialisation in silos by rotating interactions from the vertical into the horizontal to enhance Schumpeterian recombinative innovation (Cooke, 2013).

[11] Concerning the Portuguese regions, Norte and Centro illustrate the advances in Portugal in terms of R&I infrastructure. Of course, the concentration of S&T resources is even more intense in Lisbon that agglomerates the major firms and R&D units. Alentejo, Azores and Madeira are in a different situation. Their profile is based on open spaces, unspoiled nature, history and preserved traditions (from crafts to gastronomy) with a fabric of small and micro enterprises with a little drive for demanding R&D services.

[12] To debate this ambition, Algarve hosted on 5th July 2013 an international 'tourism regions' conference to hear about and share ideas about feasible tourism diversification (S3 Platform - Peer Review Workshop - Tourism and Smart Specialization).

Figure 1: Areas for Smart Specialization and Related Variety in the Algarve



Source: Guerreiro et al (2013)

Accordingly, the 'emergent' RIS3 vision for the Algarve involves the following key dimensions:

- Evolving a more dynamic, sustainable and innovative Algarve (the key vision statement), by increasing openness to innovation at interfaces between innovation and entrepreneurship,
- Implementing new innovative content activities, e.g. a diverse tourism supply (not simply 'sun & sand'), by
- Integration of sea, healthcare, renewable energy and creativity (innovation by interactions among culture, heritage, ICT and performance resources) with economic processes.

This represents an early statement that may evolve into a more thoroughgoing methodology, based on demonstration, learning, exploring, modularising and creating innovative products, processes and methodological/organisational forms. It means absorbing more S&T for working out and working through a new DUI system model for regional innovation.

A combination of STI and DUI modes involving demonstration projects, diffusing successful initiatives, may be appropriate. Innovation will be seen as practical (DUI) as well as S&T, but unlike in Norte and Centro, a renewed emphasis on S&T is needed because of past deficits.

3. Algarve and Innovation Dynamics

3.1. Innovative Profile of the Algarve

The Algarve is the Portuguese region that faced the most relevant increase of population, a growth around 28% in the last 20 years[13]. This situation evidences the attractiveness of the region but increases several problems of urban concentration as 52.49% of the population lives 2 km from the southern shore (around 12.61% of the regional territory in 2011). Around half of the population is living in eleven towns in the region but any of those has more than 40,000 inhabitants.

[13] Data available at *www.ine.pt.*

Table 1: Relevant Figures - Algarve

Population	**451,006**
Unemployment Rate	17.9%
Young Unemployment	40.3%
GDPpc	16,774€ (2010)
R&D in % of GDP	0.45% (2009)
Active population with Higher Education	17.3%
Number of companies	57,821 (2010)

Source: (INE)

Tourism is the economic activity that dominates the regional economy. Currently, Tourism and related services have a weight of 54% of companies, 65% of employment and 69% of GVA, around 2/3 of regional economy (Guerreiro et al, 2013). Tourism products are centred in 'sun and sand' and Golf but other relevant products are currently emerging (Pinto & Cruz, 2011). Being expected that by the year 2020, it is estimated also growth of this cluster, however small, around 1% increase in the share of firms, weight maintenance and employment growth of 1% in weight GVA (Guerreiro et al, 2013). Given the high degree of specialization of the regional economy, it is necessary to improve the relationship with the other value chains to generate positive synergies for all. Smaller value chains show potential to grow more, generate employment and add more value to the regional economy. This extends to recognition that tourism will always be a mainstay of the Algarve economy. Now the question is how to find related variety in tourism.

The innovation context of the Algarve reveals certain 'systemic' deficits (*ibidem*). The main failure is perceived to be expressed in concerns about the regional 'capacities' meaning mainly the limited 'absorptive capacity' that prevents effective knowledge transfer (Albors-garrigos & Hidalgo, 2012). Local firms to benefit from S&T and research, require to upgrade the competencies of regional labour, and to overcome limitations on knowledge-based entrepreneurial culture.

Underpinning those deficits, an infrastructural deficit to promote innovation exists. This is reflected in a regional scarcity of S&T infrastructures, with Algarve perceived to have lost out in the S&T infrastructure 'boom' enjoyed elsewhere in Portugal until the financial crisis began in 2007/8. Accordingly, there is an absence of many dynamic regional innovation system actors such as innovation agencies, cluster animators, incubation services among others. The role of the University of Algarve is particularly important but often difficult to co-ordinate. It is widely believed to be over-optimistic to load the variety of functions for a dynamic RIS on universities alone even in accomplished regions (B. Asheim, Bugge, Coenen, & Herstad, 2013). In innovation deficit regions, there is abundant evidence that universities, normally fail to achieve innovation aspirations of the kind evolved over many decades in places like MIT and Stanford USA (Gunesekara, 2006).

A third limitation in the regional profile is the lack of internal connectedness among the actors. That is firms, in particular, have yet to develop the culture of co-operation that – through networking – is widely understood to be an important source of regional competitiveness as pinpointed by Saxenian (1994) for Silicon Valley and Porter for 'clusters' (1998). Moreover, connectivity between most firms and university is weak, especially because of the Algarve specialism in tourism. Connectedness of regional actors seems better with elsewhere in Portugal and internationally than inside Algarve region.

A particular issue for RIS3 and future innovation-driven economic development in Algarve is its over-specialisation in tourism. This is compounded by a widespread national and international 'framing' of Algarve tourism as being of the 'sun and sand' variety. As competition for this mass-tourism global market hots up, returns on investment are squeezed in a race to the bottom of 'low road' cut-throat cost pricing. In this race, Algarve has not the critical mass and associated economies of scale to win; accordingly, to develop, both tourism and the regional economy must de-specialise.

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Table 2: SWOT Table

Strengths and main competitive advantages	**Weaknesses and main current challenges**
Gradual improvements in innovative behaviour	Excessive dependence on tourism
Propensity of tourism sector to adopt ICT	Unemployment level
Existence of potential for cluster consolidation	Insufficient capacity of the university to generate marketable knowledge
Reputation of Algarve destination with various units of excellence operating on Tourism and Leisure	Current R&D expenditure (public and private)
Research in the University of the Algarve, especially in niches related to Sea	Employment in medium/high-tech activities
Innovation policy experience at regional level, with Ettirse, INOVAlgarve and also under Regional Operational Programmes	Labour productivity
Good natural conditions for the production of alternative energies	Level of education
Inserting the region in European networking of cultural events and professional sports	Value added and exports in High-Tech Industries
	Insufficient technological support for SMEs
	Scale of Venture Capital
	Lack of skills in technology and international marketing
	Inexistence of some key-actors for a regional innovation system
	Poor connection between RIS actors
Opportunities for future regional development	**Threats the region is facing**
Awareness of the growing relevance of innovation	Economic turmoil prevents private investment in innovation
New activities and technology-based industries and knowledge-intensive leveraged by the Tourism sector	Economic turmoil reduces public engagement in innovation measures
Consolidation of technology transfer activities in the University of Algarve	Difficulty in retaining and attracting highly qualified resources compared to major competitors
Opening of firms to the Information Society	Qualified Human Capital leave the region because of unemployment
Development of maritime cluster that have some innovative content	Low demand for innovation by regional business
Growing demand for tourism products with higher added value, associated with the sea, the environment, culture, heritage, health tourism and wellness	Constraints to University-Industry mobility weakens private companies
Introduction of new technologies to revitalize traditional industries	Situation of remoteness of the region
Levelling international innovative SMEs through contacts with international partners	Increasing difficulty in attracting FDI
	Disappearance of advantages based on factor prices
	Firms do not find managers with knowledge to compete globally

Source: Based in RIS 3 Algarve (adapted from Guerreiro et al, 2013)

Data reveals very weak capacity in private R&D expenditures. In terms of RIS3 aspirations and success criteria, it is imperative to raise this as a priority in the regional authority's view. By contrast, other indicators like patenting and academia-industry co-publishing are relatively much better, improving 2007-2011 and now comparable to Norte and Lisbon (CEC, 2012). This suggests innovative activity in Algarve is efficient, increasingly productive and effectively free to the private sector whose spend ratio on Business R&D was 0.00 in 2007, rising to 0.12 in 2011 (compared to 0.57 in Lisbon and 0.44 in Norte in 2011). In aggregated terms, the European Regional Innovation Scoreboard, shows that the Algarve moved in 2007 from being a Modest medium innovator, to 2009 as Moderate low and reached 2011 as a Moderate high innovator.

In other words, weak in S&T innovation, Algarve has been relatively robust in DUI innovation (SMEs innovating in-house 0.89 in 2011, rising from 0.38 in 2007, but with a non-R&D innovation spending rate of 0.44 in 2011, declining from 0.66 since 2007). Accordingly, positive aspects are SME innovation, especially in process innovation and marketing products new-to-market and new-to-firm. Thus while correctly seeking some re-balancing of S&T deficits, Algarve needs in future to keep alive its rather productive DUI innovation character and performance.

3.2. Algarve RIS3 process and the question of a regional innovation animator

The Algarve was remarkable in showing determination to engage appropriate stakeholders as far as possible in the RIS3 process. These were regional agencies, entrepreneurs, and knowledge providers. Algarve regional authority promoted more than thirty regional stakeholder meetings in the RIS3

process in the first semester of 2013. The aim of these meetings was to assess, from a market viewpoint what such entrepreneurs needed from RIS3 to enhance the availability to them of potentially profitable market knowledge, especially regarding innovation. From these meetings, dedicated working groups had been established whose task was to focus on such 'thematic issues' as R&I requirements, Sustainability & Market Opportunities, Housing Innovation, and the Question of Future Social Care. These are in line with the EU's Grand Challenges as discussed in Europe 2020, Innovation Union, and RIS3 documentation.

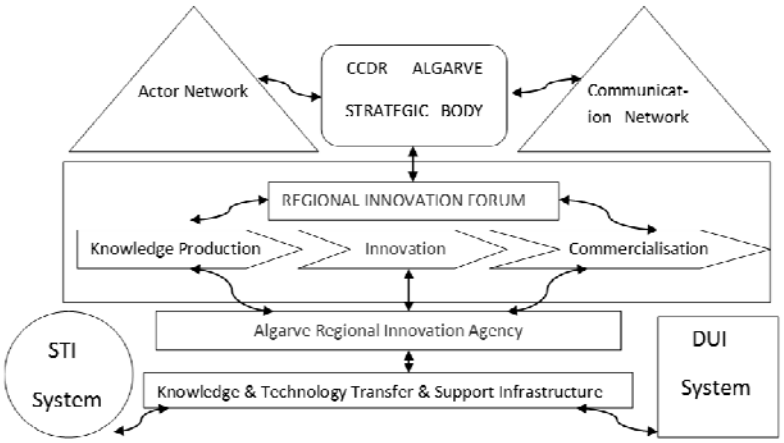
With respect to the identification of the leaders of the RIS3 process, guidance was clearly assumed by the CCDR assisted by the University of Algarve, provider of the strategic analysis of the Algarve 2014-2020 report. Strategic priority setting was based on entrepreneurial search and discovery (in RIS3 terms - testing of specific entrepreneurial opportunities). It has begun as a process in early 2013 and involved what was referred to by CCDR as a "mixed approach" for two reasons: first, there is a critical mass deficit in respect of some emergent S&T fields; and, frankly, entrepreneurs are generally not expert in imagining the future, despite stand-out examples. These mixed and thematic groups were expected to function throughout the RIS3 process implementation in Algarve region.

The regional perspectives vary regarding the need for new innovation players. Most regional research and industry is not concerned with the location of the functions of innovation brokerage, in spite of some criticisms towards IAPMEI, located in Lisbon. Regions are mainly concerned with the understanding of regional specificities. Norte and Centro regional authorities welcome any assistance, but feel the process of innovation policy will not be sufficiently decentralised to engage their regional innovation needs and aspirations best anyway. For Alentejo, regional authority, the national innovation agency is mainly envisaged as a regulator and a policy maker, and not as a 'hands-on' actor. Its role should be central, though in dialogue with regional authorities.

For Algarve, the question is framed differently. How to set up a Regional Innovation Agency (RIA) to engage the promotion of innovation at the regional level, with a view to counter the excessive specialisation of the tourism business?

For Algarve stakeholders, it is thought that IAPMEI that now hosts the national innovation agency, can best handle national issues and foster improved representation of the Algarve and wider Portuguese offer to EU and globally. Like other Portuguese regions, Algarve does not have high expectations for the national innovation agency in its RIS3. Regional research and industry customers share this perception. Nevertheless, while none feels threatened by the national agency, and, on the contrary, the CCDR welcomes any assistance regarding innovation support, expectations are that the national agency is not sufficiently decentralised to engage deeply in specific regional needs.

Figure 2: The Role of RIA in Connecting the RIS



Source: Adapted from Guerreiro et al. (2013)

More important for Algarve is to have its own Regional Innovation Agency that could be the animator of the regional innovation system (Howells, 2006). The model of this agency is not defined but its role is critical because of the lack of innovation actors in the territory. It could be private or semi-private body and charged with focusing on delivery of RIS3 outcomes in Algarve. Currently, it is not thought that any existing regional agency performs this important function, accordingly it is firmly believed to be essential for this to be regionally-designed rather than a 'one size fits all' model to be imposed from above (e.g. European Business Innovation Centre, which failed some years ago). Figure 2 underlines the role of connection of the RIA within the regional stakeholders, producers and users of knowledge, linking operational grounds with strategic spheres.

4. Breaking out of regional lock-in: how to diversify from dominant industrY

The breaking out of the tourism lock-in should be done taking into attention that the regional economy has a limited elasticity and that the actors will resist to major changes. In this way, any institutional change should be done as a layering process (Streeck and Thelen, 2009), creating and supporting activities that are related or are complementary with the dominant and established tourism 'sun and sand' to avoid any opposition. In this section, we provide synthetically two examples of tourism products that could easily be implemented in the Algarve, and that were proved to have high economic returns in other regions: 'Creative' film tourism and Healthcare. These tourism products can be important for the region not only by attracting a new type of tourist, with a different profile in terms of expenses and visit – probably reducing one of the biggest regional problems, the seasonality – but also by enhancing the dynamics of related activities, stimulating new knowledge-based niches and increasing related variety within regional sectors.

4.1. Creativity & Diversity: Film Tourism

Several regions in the world have developed film strategies. This area connects several domains from the film industry itself, to other performing arts and creative industries. It encourages both domestic filmmaking and on-location filming by foreign filmmakers. The Algarve has several conditions to succeed in this area: variety of landscapes, easy access, good transportation networks, and plenty of hours of sunlight. It is not the first time that this type of activity is referred as relevant to be developed in the Algarve. In 2006, a project named Algarve Film Commission had the ambition to establish the Algarve as a viable player in this field – even if some successes were achieved[14] the actions implemented were not enough in depth and scale.

An interesting aspect of film industry is that if a TV series or film is successful, it will attracts the "film tourists", persons interested to visit the sites were the movie was filmed. This is also a good example of tourism related variety. One good example is the case of Indian Films. In the 1970s were days of intense militant activities in Kashmir Valley, India's film backdrop. The filmmakers went to Swizertland looking for the landscapes and environments. The first Indian movie shot in Switzerland was Raj Kapoor's Sangam in 1964[15]. Yash Chopra, India's leading film-maker slowly drifted away from Kashmir to Switzerland. Many filmmakers followed and Switzerland became an integral part of many romantic Bollywood movies. To date more than 80 Hindi movies and more than 200 Indian movies have been shot in Switzerland. Bollywood films in Swiss Alps represent not only the direct incomes of crews during the production, free advertising in several markets but the attraction of Indian tourists, that currently are guests with money to spend. Indian tourists who visit Switzerland belong to the "very rich" class, also partially to the "consuming class" (Table 3). Altogether 170 million Indians are potential guests for Switzerland, tourists who are open-minded and strong consumers.

[14] It has managed to bring, since 2006, more than a hundred producers, both domestic and international, who performed in the Algarve at least part of their productions, feature films, short clips, advertising or music.
[15] News at http://www.solobackpacker.com/2013/04/15/switzerland-and-romantic-songs-of-indian-movies/

Table 3: Average day expenditure (CHF) by overnight tourists in Switzerland (not including arrival and departure)

Country	
Gulf States	500
Japan	400
China	350
India	300
Korea	250
Russia	250
USA	220
Switzerland	170
Germany	150

Source: Tourism Monitor Switzerland 2011

A good step towards the launching of this activity was given during a visit to India in March 2013 by Portuguese entrepreneurs and foreign affairs ministry. Picture Portugal and Real Image, an Indian company that works in film and television technology, signed an agreement to set up the European office in the Algarve and establish the production of Indian films in Portugal. Portimão may serve as a gateway for Indian cinema in Europe.[16]

The economic value of film tourism can also be illustrated by Skån (Sweden) and the Wallander detective film series (http://www.inspector-wallander.org/). In the evaluation of the Oresund Film Commission, it yield a regional tourism value increase estimated at 10% or over €60 million annually (http://www.oresundfilm.com/). If sustained, this can mean an increase of two million tourists over several years. Their increased use of lodging, restaurants and recreation, raises tourism value of up to €120 million annually.

Another example of innovation interactions in the film industry is the case of Cardiff (UK) with Dr. Who TV series (http://www.bbc.co.uk/doctorwho/s4/). The British Broadcasting Corporation (BBC) UK Productions of Dr.Who, shows historic film locations, for example the Tiger Bay. The BBC Drama Village located nearby has a Dr. Who Up-Close exhibition (with costumes, props, etc.). Film tourists visiting Cardiff in 2008 were estimated around 117,500, the film tourist expenditure €62 million and 1,500 employment was generated associated with the film tourism.

In parallel with the film tourism, it is known that associated creative industries and cultural economy can emerge and have impacts in employment and regional development (Leriche & Daviet, 2010). These employ people that had not until then been counted as such. Creative industries and cultural economy provide 'meaning and identity' and create the vibrancy of the place (Vivant, 2013). Impacts of the cultural economy in the regions can also be increased by 'the Bilbao effect', with investment and integration of Art and exposition sites in the daily life of the territories (Biddulph, 2011).

We know some places have "it" but others do not. And the Algarve surely has conditions to have it. Culture and creative industries stimulate a series of related variety relations with the core of the tourism sector, qualifying and expanding the supply. Recent research pointed the cultural and historical potential in the Algarve as a possible source of complementary tourism products to 'san and sand' (Cruz, 2013).

4.2. Healthcare tourism

One tourism product that can be thought in the Algarve's tourism 'smart specialization' regards Healthcare Tourism. The region is a common destination to several thousand elder people per year that come to avoid the winter in central and northern Europe, Great Britain and Ireland. The existence of SPA and talasoterapy related infrastructures in number and quality also improves the offer in this area. In 2012, the Secretary of State of Tourism Cecília Meireles highlighted Portugal's niche growth potential, noting only 1.9% of tourists visit for its Health tourism facilities. According to

[16] News at http://www.algarveresident.com/0-52668/algarve/bollywood-in-portimao

Secretary of State, more than 54% of hotel beds are not used and Health tourism might be a strategic solution[17].

The Algarve is creating an interesting network of private Health facilities. One example is the Hospital *São Gonçalo de Lagos*, the first JCI (Joint Commission International) accredited private Hospital in Portugal. It is now approved for both residents and tourists due to the quality of the clinical staff, facilities, experience, among other key dimension.

The Healthcare tourism has a relevant market value that should not be neglected. Examples of potential interests came from all over Europe, were aging with quality is one of the key societal challenges. Around 50,000 UK medical tourists per year pay privately for treatment abroad (Lunt et al., 2011). Types of healthcare includes cosmetic and dental surgery, cardio, orthopaedic and bariatric (weight loss) surgery, IVF, and transplantation of organs and tissue. The value is approximately €75 million and the leading destinations are India, Hungary, Turkey, Thailand, Malaysia & Poland.

Growing numbers of elderly and sick Germans are being sent overseas for long-term care in retirement and rehabilitation centres because of rising costs and falling standards in Germany (The Guardian, 26/12/2012)[18]. Researchers found an estimated 7,146 German pensioners living in retirement homes in Hungary in 2011. More than 3,000 had been sent to homes in the Czech Republic, and there were more than 600 in Slovakia. There are also unknown numbers in Spain, Greece and Ukraine. Thailand and the Philippines are also attracting increasing numbers. According to Germany's federal bureau of statistics, more than 400,000 senior citizens are currently unable to afford a German retirement home, a figure that is growing by around 5% a year. The reasons are rising care home costs – which average between €2,900 and €3,400 per a month, stagnating pensions, and the fact that people are more likely to need care as they get older.

There are a relevant number of apartments for sale along the Algarve coast. Probably a similar number is half built, or would be up for sale if there was a market. They are everywhere. One example. In Lagos Marina Village, the building - of some 50 stylish apartments - is quiet, with the odd individual 'for sale' sign hanging on the balcony and the external car park contains only two cars amongst 40 spaces. It seems an opportunity.

5. Conclusive remarks and policy implications

With respect to innovation-led and knowledge-based development priorities, the article stressed that the Algarve has a different profile from Lisbon and from other regions in Portugal where tourism is less predominant. A consistent refrain is the aim to make up lost ground in developing a stronger S&T infrastructure, which is another difference from most of the rest of Portugal, where recent infrastructure investment is widely applauded and there is a desire to transform it into commercial innovations.

The Algarve also seeks to develop the productive, DUI character of its recently evolved innovation profile. The region cannot get a Technology Park compared to more S&T advanced regions because there are only a limited number of relevant firms. It needs to think of a different model of knowledge transfer to firms. This echoes the sentiments about searching for a new DUI model of regional innovation mentioned previously. It may be that a Technology Park or a Technopole is not the best way in which to raise absorptive capacity for innovation opportunities and entrepreneurial search and discovery in a DUI innovation context. From a traditional Lisbon Agenda perspective, which is that of the linear, top-down and sectorally specialist recipe practised and promoted by the EU for decades, Algarve lacks the critical mass in specialist fields to warrant a pole in such a field.

[17] News at http://www.publituris.pt/2012/12/03/turismo-de-saude-e-aposta-estrategica-do-governo/
[18] News at http://www.theguardian.com/world/2012/dec/26/german-elderly-foreign-care-homes.

To make it work CCDR needs to stimulate 'transversality' across S&T interfaces to help positive R&I outcomes. In Algarve, DUI innovation is the stronger suit, reinforced with S&T elements and DUI requires either mixed R&I centres or a more multiplex, distributed intelligence for knowledge exchange and transfer represented by regional networks. This involves a process not of 'picking winners' but 'learning from your own industry'.

The Algarve has already embarked on this process with its 'Thematic Issues 'labs' under RIS3 bringing together entrepreneurs and associations in the form of 'detailed working groups'. In this way, a bottom-up process of niche identification has already been embarked upon. The question is: what is the next step? How to engage niche management or even 'strategic niche management'? This is really the new task for regions such as the Algarve, throughout Europe and, indeed, the world. There are a number of steps already worked out in the 'niche management' literature (Geels, 2004, 2010).

One first step concerns overcoming 'critical mass' (which is mainly a nuclear engineering issue) by mixing sectoral affiliation (if any) of firms and/or their associations. In Algarve, as the basis for a new approach, there is a preliminary aim to help form 'one single Algarve Business Association'.

This can then more firmly host the 'Thematic Issues' around which panels of industry representatives and/or entrepreneurs will focus, bringing together opportunities for niche management at industry interfaces with, subsequently, entrepreneurial discovery and exploitation. It concerns "learning from your industry". It means the RIA paying serious attention to the considerations and conclusions of such panels regarding 'niche opportunities' for exploitation from knowledge recombination discussions. RIA must then be 'catalytic' in organising the 'innovation theatre' in the form of demonstrations, road-shows, and exhibitions across the community of Algarve entrepreneurs. This involves showing existing innovations from inside or outside the region, including abroad, that may be 'pre-adapted' modules or whole solutions for re-use in a new problem or industry context within Algarve.

A second step, showing potential innovations that may have niche value across interfaces, mainly involving the 'modular' deliberations of Algarve entrepreneur panels, including R&I expertise, with outsiders invited to adjudicate or help take forward. Hence this explores the 'white spaces' that no-one has yet identified and rests on bringing together 'knowledge modules' that are candidates for niche-based innovation. RIA must then 'orchestrate' contests in which competition for RIS3 innovation subsidies and support occurs among the 'pre-adapted' and 'white space' concepts respectively with the winners being rewarded with funded support projects (in which there must be substantial private as well as public investment funding). These may be early-stage and exploratory, mid-stage and examinatory, and final-stage and exploitative in nature and status, with the aim always being to produce innovative outcomes.

RIA must establish a monitoring, learning and communication system to refine understanding and improvement upon successful practice. In this way, and following the 'strategic niche management' literature, the niche becomes, after time, 'the dominant design' or 'socio-technical paradigm' and eventually the 'landscape' or 'conventional wisdom' among innovation adopters.

But the success of the Algarve in 'Smart Specialization' does not require only a new institutional set-up. It depends that tourism creates stronger linkages to other areas.

It is critical to create the adequate policy-mix and governance tools to facilitate the implementation of the process to ignite tourism variety. The article presented a few examples of tourism variety, connected with EU Grand Challenges like Healthcare and Cultural investment, where there is significant and diverse hidden demand, supply that can be enhanced by 'entrepreneurial discovery'. Algarve has some shining examples but to escape 'sun and sand' lock-in more must be done.

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Session 2 - Empirical studies focusing the conditions for resilient territories

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INNOVATION AND TRADITION IN THE VALORISATION OF ENDOGENOUS RESOURCES: THE CASE OF SALT FLOWER IN THE ALGARVE

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INOVAÇÃO E TRADIÇÃO NA VALORIZAÇÃO DOS RECURSOS ENDÓGENOS: O CASO DA FLOR DE SAL NO ALGARVE

RESUMO: A inovação é um conceito que se encontra intrinsecamente ligado à evolução, muitas vezes relacionado com a mudança técnica. Contudo, a inovação pode ter um escopo mais abrangente do que estritamente o avanço tecnológico. Nesta perspetiva, é necessário avançar com a ideia de que a inovação é um processo complexo, uma construção social que envolve uma variedade de atores. As ligações entre o conhecimento tradicional, em particular a sua componente tácita, e a inovação desempenham um papel central para um aumento da valorização dos recursos endógenos e um caminho possível para induzir dinâmicas regionais adicionais. O Algarve pode ser, neste aspeto, um estudo de caso interessante. Por um lado, a região tem evidenciado recentemente uma resiliência limitada, sofrendo um declínio económico devido ao aumento das taxas de desemprego e à redução de certas atividades económicas e ativado pela crise internacional e pelo aumento da queda estrutural do sector mais relevante – o do turismo. Por outro lado, a região detém um potencial por explorar, especialmente ao nível dos seus recursos marítimos endógenos. A valorização destes recursos aparece em áreas fronteira do conhecimento tradicional e da ciência. Esta comunicação pretende explorar as características inovadoras do Algarve na economia marítima. A metodologia que serviu de base ao presente estudo é baseada no caso da flor de sal Algarvia, um produto onde a região tem ganho uma presença relevante nos mercados nacionais e internacionais. Através da análise das ligações existentes entre o conhecimento tradicional e a inovação tecnológica, o artigo debate os sectores baseados na tradição como veículos para a inovação e para o desenvolvimento regional.

Palavras-chave: Algarve, Desenvolvimento Regional, Economia do Mar, Flor de Sal, Inovação, Tradição

INNOVATION AND TRADITION IN THE VALORISATION OF ENDOGENOUR RESOURCES: THE CASE OF SALT FLOWER IN ALGARVE

ABSTRACT: Innovation is a notion intrinsically related to evolution, often connected to technical change. However, innovation can have a broader scope than only the strict technological advancement. In this perspective, it is necessary to move forward with the idea that innovation is a complex process beyond technology, a social construction that involves a variety of actors. Here, the linkages between traditional knowledge, in particular its tacit component, and innovation play a central role for the enhancement of endogenous resources valorisation and a possible path for inducing additional regional dynamics. The Algarve region can be in this aspect an interesting case study. On one hand, the region evidenced recently limited resilience, suffering an economic decline due to the rising of unemployment and the reduction of certain economic activities triggered by the international crisis and incremented by structural breakdown of the most relevant sector - tourism. On the other hand, the region contains unexplored potential, especially in terms of its endogenous marine resources. The valorisation of these resources happens in bordering areas between traditional knowledge and science. This communication intends to explore the innovative characteristics of the Algarve in the maritime economy. The methodology is based in the case study of the Algarve´s salt flower, a product where the region is getting a relevant presence in national and international markets. Analyzing the relationship between traditional knowledge and technological

innovation the article debates traditional-based sectors as a vehicle for innovation and regional development.

Keywords: Algarve, Innovation, Maritime Economy, Regional Development, Salt-Flower, Tradition

1. Introduction

Algarve, located in the extreme southwest of Europe, is the most southern region of continental Portugal, embracing about 220 km of coastline. This region has maintained throughout its history, a relationship of strict complicity with the sea since the maritime expansion that marks the Age of Discovery, to the development of fishing and canning industry, and tourism as major economic activities. The sea has developed identity and traditional contours with the region. It represents the past of the Algarve, continues to arrogate its importance at the present and should undoubtedly be part of the future economic development of the region.

The replacement of traditional economic sectors, such as agriculture and fishing, by the activities currently more representative, such as tourism, trade and construction, represented high opportunity costs, resulting in one hand, in a change of identity with which the locals not identified with and secondly, a fragile and undiversified economy. However, the region contains unexploited potential, particularly in the maritime economy, taking as a reference a strategic combination between scientific knowledge and the traditional knowledge that came overestimating and accumulating over the years, and it is a source of human capital and distinguishing characteristics of the region. This may be the basis for the revival of a more competitive and innovative regional economy.

Innovation as a concept is intrinsically related to the change in the economy, frequently associated with the problem of technical revolution and technological progress. However, this simplistic idea that places emphasis on scientific knowledge, assumes that the knowledge does not exist in a tacit way, isolated from the knower. It is then necessary to move forward with the idea that innovation is not only based on technical progress, but rather a complex process, a social construction that involves many actors. Thus we intend to reflect on the role of tradition in innovative processes, and what should be its role in the regional development.

The main goal of the paper is to exploit the potentialities of the Algarve´s region in the context of marine resources, through practices and processes that make use of the valorization of local resources and traditional accumulated knowledge that represent innovative alternatives which promote the economic development of the region, using as a case of study the production of salt flower. In this sense, the text is organized according to the following topics and sections. The first part is intended to outline the theoretical framework concerning the importance of the maritime economy for the region's development. Then is introduced the concept of innovation, as a recurrent notion of the article, and on which it is intended to reflect, in particular, in their connections with the traditional knowledge. In the third phase, we explore the production of the salt flower in the Algarve, using an empirical approach based on a case study, in order to show that the use of craft processes may represent a form of innovation, which encloses several potential for the region. The paper concludes with some conclusive remarks and policy implications.

2. Maritime economy and regional development

The sea, as a strategic resource, has received an increasing amount of attention in recent decades since government institutions are beginning to recognize this resource as a crucial and reference element to the economic development of the regions.

These trends are verified also in Portugal. In the national context there are, according to a recent study (SaeR, 2009), five strategic areas that Portugal can explore and develop through a sustainable use of the resources: tourism, environment, value-added services; cities and development and the

economy of the sea. Although not all five areas are strictly economic sectors, carry with them the potential to represent the basis to the emergence of other activities for structuring the economy. Therefore, through the exploitation of maritime resources, according to a logic of integration, is feasible favor the latent capacity to integrate a framework of modernization through a transversal inclusion of more traditional sectors and the potentiation of the necessary conditions to support the transition between the development model of the national economy and the development model of competitiveness.

The efforts to promote a model of regional and sustainable development should follow a strategic plan which involves the region with the sea. Thus, emphasizes the importance of the emergence of a maritime cluster in order to achieve a better articulation that maximizes the use of synergies and contribute to the construction of an integrated and sustainable sea as a resource for the economic development of Algarve (Guerreiro, 2011)

2.1 Clusters Dynamics

The cluster´s concept takes on different meanings depending on the sectors in which it is being examined and varies according to a spectrum that can go from the geographical perspectives to socio-cultural factors or even territorial factors. Within the scope of the sea´s economy is a concept that has received increasingly relevance, not only on the theoretical reflections, but also in the policy and implementation of best practices. Michael Porter defines a cluster as a manifestation of the economy, in which the proximity amplifies all the existing constraints to innovation and the increase of the economic performance, in other words, clusters are geographically proximate group of interconnected companies and associated institutions in a particular field, connected by similarities and complementarities (Porter, 1998) Although, as mentioned, is a concept contextually variable, there are fundamental characteristics in their understanding (Monteiro et al., 2011): geographic concentration, specialization (focus in an activity with which all agents are related); multiplicity of actors (companies, universities, R&D centers, public authorities and other institutions related); competition and cooperation (characteristic relation between the different actors of the cluster); critical mass (to generate internal dynamics) and innovation (cluster organizations should be involved in processes of technological, commercial and organizational change).

Understanding the dynamics and structure of the concept is a reflective and variable exercise, which can be facilitated serving four ideal types of the concept. According to Chorincas et al. (2001), a cluster can be:

- "Micro Cluster" or local cluster, represented by a number of companies and institutions geographically close and connected by common and complementary aspects, operating in a particular field of activity;
- "Industrial Cluster" or cluster, which acts as a set of interconnected companies and associated institutions, which operate in different fields and using different but complementary technologies. In this type of cluster the innovation generated by each generates benefits for others, and in the general context all the members benefit from increased global competitiveness;
- "Regional Cluster", which works in the same way that the industrial cluster but operating at the regional level. In this case the geographical proximity has a larger role in the dynamics of interaction between the actors and the level of competitiveness and innovation assembly;
- Finally, the "Mega Cluster", as a set of distinct activities reactively, in which the complementary advantages of networking among cluster actors and other entities are explored.

The proximity and geographical location are thus striking features to the emergence of clusters, due not only to the ability of networking and effectiveness of inter-relationships, as well as the easy addition of certain needs, such as access to raw material. It is due to this factor that the majority of maritime clusters emerge along the coastal areas. Taking into account the specificities of the

emergence of clusters in a given region is crucial to realize the dichotomy between maritime clusters "spontaneous" and maritime clusters "constructed". 'Spontaneous clusters' arise without public encouragement, as a response to the specific local conditions and favorable markets. In this case, public policies operate mostly in a horizontal logic and focus mainly on innovation and market development, then are conditioned by the fluctuations of the local economies. On the other hand, 'constructed clusters' produce specific policies to support specific activities. In both cases, regarding the marine sector, the cluster development is anchored in the existing potential of maritime activities, scientific knowledge and traditional (Pinto and Cruz, 2012). These associated factors reveal that the existence of clusters is one of the most remarkable aspects of regional economies (Porter, 2003).

2.2 Maritime Economy in Algarve

At a regional level, the Algarve with approximately 220 km of coastline and a historical and identity relation with the sea, takes numerous potentialities. However, the strong specialized development undertaken by the region in the past decades has resulted in the decline of the most traditional sectors of the region along with a deep asymmetric occupation of the territory (Monteiro et al., 2011). The inability to adapt traditional sectors to the market and the increasing unemployment have been undermining the resilience of the region as well as its cohesion and the foundations of the socioeconomic development model. Thus, the future development model of the region should go through the choice of new areas of activity or by reforming and restructuring the traditional sectors in order to strengthen the capacity of adding value and competitiveness to the region´s economy.

The Algarve, as a region, has enhanced a path that aims the appreciation and affirmation of its history and the valorization of its resources, aspiring to become a strategic target in the economy of the sea, and all national and European policies are trying to lead this regional trend. According to data from the European Commission (European Commission, 2010), the economy of the sea represents about five million jobs, and between 3-5% of EU GDP comes from economic activities related to this sector. In the search of the effectiveness of this strategic direction, the Algarve Agenda for the Sea, was prepared and pointed to the need for structural interventions in the areas of fisheries, aquaculture and salt production, as well as in recreational boating and scientific research (CCDR, 2009). This Agenda was the basis for the creation of 'Plataforma do Mar Algarve', an association for the Promotion of Knowledge and Economy of the Sea in the Algarve, which aims to take a crucial role in the dynamics of the regional cluster, through the development of the maritime cluster and the regional products internationalization. This framework aims to take a cluster logical, enjoying synergistically skills of different partners, public and private, to emerge strong and encompassing projects in the area of the sea.

The Algarve's regional development must go through this process of contextualized innovation, of utilization and enhancement of its geographic location, the endogenous resources and the tacit knowledge of the region´s human capital, in order to increase its economic competitiveness in a sustainable way. The economy of the sea, as mentioned, is one of the strategic resources, not only for the region, but also for the country and the European Union.

In the past decades has emerged an awareness that the management and governance of ocean and coastal areas must be addressed in a comprehensive and integrative way. The government, more aware of the importance of this sector, implemented inclusive policies that promote a sustainable development and exploitation of marine resources. Although there are numerous possibilities in this field, its manifestations are negligible, thus making it a latent potential liable of promotion.

Portugal has followed the global mobilization for the Ocean and for its promotion as a strategic vector of development. The first steps on this path, nationally, were given in 2006 by the creation of the National Strategy for the Sea. This strategy has now been renovated to the new strategic period 2014-2020, allowing Portugal to meet the challenges for the promotion, growth and competitiveness of the maritime economy, in particular, taking into account the significant changes in the political and strategic framework at European and global level. This policy document aims to valuing

economic, social and environmental of the national maritime space through the implementation of cross-sectorial projects (ENM, 2013). It was created a national agency - OCEANO XXI - Association for Knowledge and Economy of the Sea, with financing from the funds of the NSRF 2007-2013, which sought to intensify the cluster dynamics for the effective exploitation of the maritime potential.

The Algarve´s region has made an effort to adapt to this reality, with measures and policies that pursue these objectives, taking the sea as one of its strategic resources. In fact, programs and plans for the region reveal a closer relation to this ambition, putting the sea in a crucial position and as an enhancer of regional development. This evidence can be found in regional strategic documents such as Regional Development Strategy 2007-13 submitted to the European Commission (CCDR, 2006) and Regional Operational Programme – Algarve 21 - (CCDR, 2008), which distinguishes the sea as one of the key areas for regional policy intervention.

3. Innovation and tradition

The concept of innovation has had, over the last years, a greater emphasis, penetrating not only in the scientific discourse, but also in the everyday vocabulary. With this increasing application of the concept, also arises a problem of conceptual definition and delimitation of borders and boundaries. Innovation is a term that is intrinsically linked to economic changes, and had benefited from the developments in economics as a scientific discipline, and in this sense, within this problem is common to find the concept of innovation associated with the idea of technical change or technological advancement (Oliveira, 2008:5). This short section is intended to discuss this aspect of innovation and seek to corroborate the hypothesis that innovation can sometimes be separated from technological progress and be related to traditional methods or low technological intensity. Innovation can exist in industries with low or medium technology (Tunzelmann et al., 2005), and the food production industry is one of the most significant examples.

It´s important to refer that the majority of the analysis related to innovation, emphasize the importance of a historical approach. First, innovation is based on temporal conjunctures about the future and secondly, the innovative capacities are developed through a complex and cumulative learning process and thus, innovation processes are constrained or facilitated by social contexts. In this way, innovation is a heterogeneous process that varies with time, industries and countries (Bruland et al. 2005).

Schumpeter, one of the major references on this topic, develops five key distinctions that operate as ideal-types of innovation. Thus, innovation can refer to the creation of new products, new processes, new sources of supply, the exploitation of new markets and new organizational forms. However, economics, while science has focused mainly on the first two types (Olive, 2008). In addition to these five distinctions on which the innovation can be based, there are four major categories or domains related to the concept. Companies, institutions of science and technology, knowledge transfer and the environment or the surrounding context are areas that delimitate the field of innovative processes. Furthermore, as the Oslo Manual, these areas act as a map that reveals the properties on which policies should focus, functioning as a frame of reference in the creation of policies (OECD, 2005).

3.1 Innovation on National and Regional context

The emphasis on innovation systems has been applied mainly at the national level, although in many instances it is necessary to apply similar considerations to transnational and local level (OECD, 2005). The innovation policies framework at the national level is influenced by European strategic elements, being the regional plan an extension of both. Thus, innovation in the European, national and regional levels operates as an integrated and inclusive logic of the needs of different circumstances. This analysis focuses mainly on the edges of innovation in the Algarve region, in order to provide an integrated perspective that facilitates the understanding of later chapters.

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Although there is a significant effort to build integrated policies, innovation cannot and must not give generalizations due to their heterogeneous characteristics and the need to identify it before a frame of social, cultural and economic reference. According to Asheim et al. (2005), there are two paradoxical features of the contemporary global economy. First, innovative activity is not randomly distributed across the geographical space. In fact, the more knowledge-intensive the economic activity is, more likely to be geographically clustered. Secondly, this trend of uneven spatial concentration has taken more intense contours with the modernization of the economy, and not the opposite. Indeed, in a world marked by global competition, in which the ability to achieve success tends to depend on the ability to produce new realities and new or improved processes, tacit knowledge is the most important basis for value creation based on innovation (Lundvall et al., 2005) This is due to the easy access to explicit knowledge or subject of coding. Tacit knowledge is a fundamental vector of the innovation activities geography. Tacit knowledge carries with it some difficulties in the process of sharing and transfer, especially taking into account the spatial distances (Asheim et al., 2005). Tacit knowledge does not "travel" easily because their characteristics reside in the knowledge and culture of the social agents and thus, its transmission is more effective when performed between partners who already share some basic commonalities: the same language, common codes and conventions of communication and standards that have been shared by a common institutional environment (OECD, 2005). This spatial proximity as key to the production and transfer of tacit knowledge reinforces the importance of the emergence of regional innovative clusters, where the transfer of tacit knowledge can be undertaken in order to increase the competitiveness of regions.

Theoretically, innovation policies are contained in two different positions. On one hand, the perspectives that put the emphasis on non-interventionism. On the other hand, the systemic approaches. The first approach is linked to the existing pattern in the characteristics of the dominant economy, appealing to the rationality and freedom of economic actors. The second perspective takes a closer look at the different contexts and recognizes that skills are unevenly distributed between the companies and the good practices with regard to development and technology, are not immediately distributed / diffused across firms (Lundvall et al. 2005).

At European level there is a concern that is based on the creation and promotion of a set of strategic guidelines that sponsor growth and employment through a restructuring of the innovative and competitive capacity and the business environment, with an intervention concern through investments in areas of knowledge, innovation and research as propulsion engines for economic development and sustainable growth. According to the Regional Plan for Innovation of the Algarve (UAlg, 2007) in the fields of R&D and technological innovation, the Algarve is in an unfair level before other European regions. This condition is due to the over- specialization and exploration of sectors and economic activities with an innovation undeveloped degree, with a low short and long-term return of the entrepreneurial dynamism with a nearly nonexistent use of tangible and intangible elements associated to the technological development.

Although it is crucial to invest in technological development, it is equally important to perform an exercise in recognizing and understanding the characteristics and potential of the region and to appreciate them in their full, looking for innovative solutions to the effect, without putting the emphasis solely on technological progress. Regionally the Algarve has recently assumed a greater concern for their innovation framework. The social and economic characteristics of the region have highlighted the importance and concern to maximize all opportunities arising from its geographical location and its geo-economic integration, so as to urge the building of an extended enterprise network capable of providing significant structural adjustments in the specialization profile of the region (UAlg, 200). The generation of effects that are representative at national and European level in the valuation processes of regional resources presupposes the existence of synergies between different local institutions.

This trend of decentralization of public policies encloses numerous meanings that varies from the demand of specific objectives for the region, to the existence of regionally differentiated instruments

up to regionalized power of decision. Thus, it is crucial that the Algarve is able to structure regional and dynamic innovation systems, interconnected to get more innovative and competitive contours. The fact that the Algarve provide structural limits to innovation can lead to conditioning the sustainability of their own development (Pinto et al., 2012).

3.2 Innovation and Modernity

The concept of traditional knowledge is used in the definition of public policies and is seen as a resource for economic development both for territories that have passed or that are starting to pass to a de-industrialization process, as for rural areas in decline (Calafati, 2006). Traditional knowledge is a complex object, which varies according to the different regions, and that does not follow a static and invariable definition. Although it is clear that traditional knowledge emerges from practices from the past, not all past practices can be considered traditional knowledge (Hilpert, 2006). Traditional knowledge is a heterogeneous process, such as innovation, which must be contextualized in space and time, but it refers to the traditional practices of a region, that has an identity and transversal character to its residents.

The knowledge has been shown to be a critical factor for both development and for regional patterns of regionalization. The approach to innovation based on technological progress is a narrow, given that regional development is heavily based on skills and competences that are not necessarily related to technological progress (Hilpert, 2006). The regional approach should be based on a particular traditional orientation which confers to the region a unique characterization a specified development.

The different sources of knowledge ultimately contribute to the emergence of several opportunities once they are born of a set of individual experiences that influence the accumulated traditional knowledge over the course of development of the territory. Thus, these regional structuring, characterized by different agents potentiate the emergence of a knowledge that is grounded in the experiences of individual actors but at the same time is generated by regional tradition shared between them (Calafati, 2006). In this sense, the formation of networks between the actors is crucial for the determination of knowledge that meets the actual needs of the region, enhancing their local resources and the skills of its human capital.

Traditional knowledge is mostly composed of tacit knowledge, in other words, knowledge that resides in the actors themselves, making it difficult to transfer. This obstacle to the transfer can confer a non-competitive character to the economy of regions that are based on this kind of knowledge. Another obstacle arises, which works in two ways, as an obstacle and as a result, are the region's specificities (Calafati, 2006). In a case such as the Algarve, where traditional knowledge is very grounded in environmental characteristics and raw materials, might not exist an advantage to transfer the knowledge to another region that does not have the same characteristics of the Algarve. However, these obstacles are overcome by creating effective networks with dynamic and integrated connections between actors in order to facilitate the knowledge transfer to other regions in which it can be adapted (Hilpert, 2006). Emphasizes thus, in order to increase the innovation process and promotes it through practices that do not pass necessarily by technological progress, the creation of regional and inter-regional clusters, and later his promotion, so that synergies are fortuitous and function as a basic tool for regional economic development.

The tradition must be faced as the basic tool for regional development and not as an outdated feature that works as an obstacle to modernization. Traditional knowledge was economically superfluous for some time but regained economic value with development potential for regions with a good knowledge based on tradition (Hilpert, 2006). All innovation processes must be understood taking into account a particular social, economic and historical context. With the advent and the reliable drop on modernity, and with and increment of the social distance of origins, consumers tend to look for products that share a closer relationship with the region's identity. This consumer demand is revealing their needs and is both an engine driver for the emergence of innovative practices through the development of new products or production methods that find new markets, allowing

regions a restructuring that focus on its traditional competences. The region's ability to create new consumption and production paths power its viability and competitiveness in global markets.

To this type of development Hilpert (2006:586) describes as 'knowledge from the region' and defines it as the knowledge that emerges from the existing traditional relationships and a new logic of supply and demand in the markets. This leads to the creation of new knowledge that is generated through the encounter between tradition and the new opportunities that innovation can provide. The regional capacity for integrated and fortuitous exploration between the profile of the region - its accumulated traditional knowledge accumulated, its local resources, the contexts and the human capital - and the implementation of innovative practices that pass for promotion and reuse of these factors, provide the region with a greater ability to restructure and recover from external shocks, increasing thus its resilience.

4. The salt flower in Algarve

The following section debates about the specific case of the production of salt flower in the Algarve and intends to elucidate on the production process, introducing the notion of the value chain, and demonstrating that a production process with a low technological basis can effectively represent a mechanism of innovation.

4.1 Methodology

The further considerations has as methodological basis technical visits to two companies (N and M) in the Algarve´s region, specialized in the production of salt flower. All data were collected systematically, based on operating variables such as the degree of technological modes of production, traditional knowledge, and the value chain and market characteristics, to ensure the viability of the scientific article.

The companies are located at Ria Formosa. Ria Formosa is a large ecosystem that spans the municipalities of Loulé, Faro, Olhão, Tavira and Vila Real de Santo António, comprising an area of about 18,400 acres along 60 kilometers, with a maximum amplitude of about 6 kilometers. The area is considered Natural Park and is bounded in the south by the Atlantic Ocean and on the north by cropped salt and small beaches. The fact that this area be a Natural Park prevents the existence of heavy industries, thus contributing to the preservation of water quality and hence the quality of the salt that is produced there. During the process of data collection was not intended to analyze each company individually but notice the similarities between their production processes and its component of tacit and traditional knowledge, with the aim of performing an integrated analysis of the production of salt flower in the Algarve.

Both companies have innovative features, although there are some structural differences between them. The company N, has its own Salinas, and so, are the responsible for all the phases of the value chain. Company M does not have its own Salinas, so buy the salt flower to other Salinas from Ria Formosa. Both of the companies have a strong component of social responsibility, environmental preoccupations, sustainability and improvement, valorization of the traditional knowledge, and low industrial impact.

Figure 3 – Salt Flower cleaning process

Photo: Hugo Pinto

In Figure 3, is possible to see the cleaning process of the salt flower. This process is done manually, without recourse to any kind of washing or chemical addition, guaranteeing the product quality and its sustainable character that work not only as the company's brand image, but also as an integral part of its mission, strategies and values. The mechanism works through a system that extracts the product of deposits and leads by a conveyor belt, where is elaborated the process of detection of impurities and is subsequently deposited in bags where the product is packaged and stored. In this figure is reflected that the innovative capacity of the company is not coupled with technological progress. The technology used in the factory of the company N, in the case of the production of sea salt and salt flower, is only the strictly necessary for the requirement of its production. The majority of equipment in industrial facility is designed by the company itself, and carried out wherever and whenever possible by local factories, leveraging a broad set of interconnections of proximity.

The company's M product is certified by companies specialized in food certification to ensure their artisanal production and its purity with regard to chemical composition. The innovative company's central feature is the creation of a prototypical processing plant which consists of the manufacture salt flower and traditional sea salt free of impurities, complying with the legal requirements of the food industry, without transforming the particularities of this artisanal salt. The project was co-financed by the Regional operational programme Algarve 21, through FEDER funds of the NSRF in the scheme to promote productive innovation. In Figure 5 you can verify the storage area, location of the final phase of the working process in the company M.

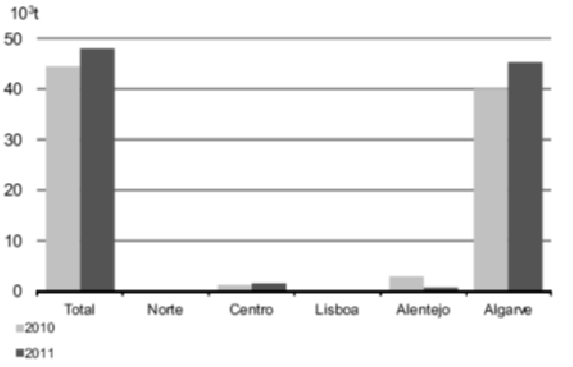
4.2 Salt: Product Types and the Algarve´s Relevance on the National Production

Throughout history we can see that the man has maintained a strong relationship with the salt. This bond between man and the salt is documented in China since 2700 BC, a time when the Egyptian people use salt in the process of mummification. Later, in classical antiquity, the salt system functioned as currency exchange and Roman soldiers received as salary rations of salt known as "*salarium argentum*". The salt was considered a delicacy to which only the layers noblest of societies could access, being referred to as "white gold". Portugal, for its natural conditions, geographical and climatic conditions, was early a major producer of salt, represented as a strong contribution to the coffers of the Kingdom.

Portugal, for its natural conditions, geographical and climatic, was early a major producer of salt. In Portugal there are five savory sets (saline) as identified: Salgados de Aveiro, Figueira da Foz, Setúbal,

Alcácer do Sal and Algarve. Currently, the Algarve region is responsible for the vast majority of the Portuguese salt production, particularly in areas of Olhão, Tavira and Castro Marim. The salt industry is an important sector for the Portuguese economy, within the seafood area, and one of the key areas for the Algarve´s economic and regional development. In 2011 the production of sea salt, in the continental Portugal, was around 48 tons (figure 1) with an increase of about 8% compared to 2010, and the Algarve was responsible for 94% of this production (INE, 2011). The average annual production of salt, per salina, is about 1200 tons, and the Algarve registered the highest productivity with 2062 tons of salt.

Figure 1 - Production of sea salt, by NUTS II 2010-2011



Source: INE, 2011

To clarify the analysis is important to distinguish the different types of salt, to contextualize the following reflection - Table 1.

Table 1 - Types of Salt

Type	**Process**	**Characteristics**
Traditional Sea Salt	Traditional harvest – handmade; without chemical additives	80 kinds of minerals; Moisture and Whiteness
Normal Salt/Sea Salt	Collecting machines; Chemical wash; Centrifugation; Bleaching	Mostly composed only by sodium chloride
Refined Salt	Industrial methods (pressure and temperature control); Dissolution of sea salt; Double Crystallization	Absence of crystals; Mostly composed of sodium chloride; Other miscellaneous chemicals
Salt Flower	Daily and manual collection (rodo); Without washing.	Light crystals; Form of Plectrum; Extreme whiteness;

Source: Own elaboration

The traditional sea salt is produced in small, old-centuries Salinas, using traditional methods, which date back to the historical time in which Portugal was about Roman rule. It is a process with completely natural features, which does not undergo any processing, or use of chemical additives, using only sea water, solar energy and the traditional knowledge of local agents. The natural process of crystallization is optimized so that almost all the minerals present in the water of the sea, approximately 80, remain present in the salt. After crystallization, the salt is collected via a manual process, being sun-dried for a minimum of five days for the remaining water evaporate, thus maximizing the percentage of minerals that constitute. On the other hand, the sea salt, salt, commonly used, is collapsed in salinas by machines and is later chemically washed, centrifuged, dried, and sometimes suffers to a bleaching process. The refined salt, does not result directly from production processes that occur in salinas, being dissolved and passing again by the crystallization process subject to degrees of temperature and pressure controlled in industrial installations.

Subsequently, it is dry by the heat of combustion of petroleum derivatives and additive with different chemical components. Finally, the salt flower, is the Holy Grail of all kinds referred to previously.

The flower of salt is composed with light crystals, in the form of straw, an extreme whiteness that form on the surface of small pieces of salinas, resulting in a very thin film of salt covering the said parts. This film is collected daily, with a squeegee a sampling manual instrument, requiring perfect weather conditions. Although not always has been a product marketed, has always been consumed in Portugal by marnotos, the saline workers. The productive time of the salt flower is typically less than that of the traditional sea salt, resulting in a smaller production; reason is a product available in small quantities and with a market price greater than all other types of salt.

This synthetic exposition of the different typologies of salt production in Portugal allows to frame some of the considerations of the next section. The focus will be placed on production of salt flower and taking into account the process shown previously, it is intended to corroborate the hypothesis that this process can represent himself an innovative method that is not directly related to the technological development and consequently, with the socially assigned correlations between technology, innovation and modernity.

4.3. The production of Salt Flower in the Algarve: tradition and innovation

The production of salt flower assumes as an integral part, a single production process which combines tradition, seized by marnotos, with the modernity of the quality processes, management and innovation, in order to obtain a product of excellence. As mentioned the salt flower not always served the purposes of marketing, being only consumed by workers in salinas. However, with the advent of modernity and the evolution of societies, marked by the rise and early decline of modernizers processes which tend to extend to all fields of economic and social life, ends in themselves characteristics that become revealing in this process. In the particular food and nutrition plan, it is possible to verify a structural change of consumer demand, which operates in three different directions. On the one hand, the social actors tend to seek products that take a closer relationship with the identity of the region, and consequently, with the very identity of the consumer. There is a growing trend of concern about individual health and nutrition that focuses on demand for quality assurance of the products they purchase. These two factors cohabiting in the social dynamics with a provision which has been dissipating in recent years – the pursuit of sustainability and of products that bear a social responsibility component.

These structural changes trigger a change in the contours of the economic demand. This consumer demand is revealing of its needs and is at the same time an engine thruster for the emergence of innovative practices, seeking to respond to this need that stills under-satisfied. The Algarve´s salt flower is a product that aims to give this type of response, enabling the characteristics of consumer demand, through the commercialization of a new product, which maintains a relationship of identity with the region and with the social layers, produced by a small-scale process, it represents a healthier alternative than the sea salt and assumes the guarantee of preservation and environmental sustainability. The flower of salt is a product that ensures the needs of a heavily segmented market in that its consumers form a niche that characteristically holds a considerable purchasing power. However, with the spread, which tends to be increasingly widespread, characteristics and concerns referred above, this is an innovative niche, which assumes a pronounced growth trend.

The value chain of the salt flower begins with access to the raw material required for the production of the product, which founds in the Algarve the perfect weather conditions for its development. It follows a phase of internal processes involving handmade processes and traditional knowledge which leads to salt flower which is mostly distributed to consumers outside the national context, as can be seen in Figure 2. Sustainability characteristics and intrinsic tradition to this value chain will result in a product with a high cost in relation to the price which is the general purchasing power of the national population.

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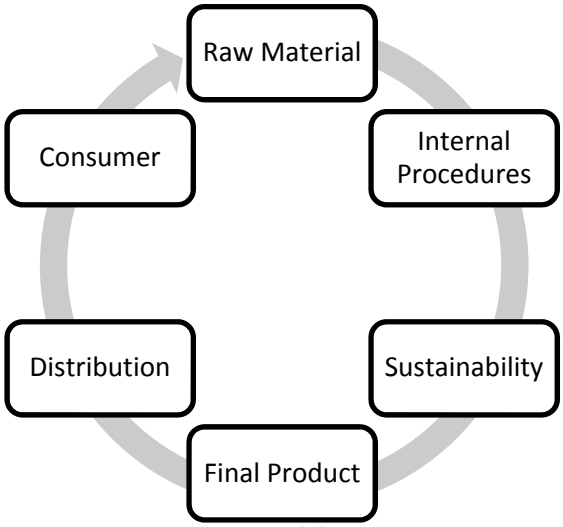
Figure 2 – Salt Flower Value Chain



Source: own elaboration

However, the fact of salt flower is a product disparaged in the value chain and national legislation to date complicates the marketing in the traditional version, companies need to adopt strategies that enable them to guarantee their economic sustainability. In this sense, the commercial strategy adopted by enterprises passed through to export most of the production, with the goal of obtaining notoriety and visibility in external markets and subsequently bet on winning the national market.

One of the features which is intended to develop is the importance of traditional and tacit knowledge inherent to the production process of salt flower. In fact, the process is essentially based on the knowledge of local actors in the region, the marnotos, which have tacitly know of extraction, which gives to the salt flower the primordial characteristics, but is possible to verify a non-competitive character of the product, due to its difficulty of being subject to transfer.

5. Results

The results show 3 main directions that put the Salt Flower as an innovative product: Firstly, we are entering a social phase, in which it is possible to verify some changes, not yet determinants but revealing on the type of the consumer demand. Increasingly there is a tendency to search for local/regional products and with low environmental impact, arising the importance of the concepts of regional and local development and sustainability, which is a decisive factor for the search of salt flower; Secondly, the salt flower is a product that requires climatic conditions that only can be found in very specific geographical points, as is the case of Algarve, and these geographical conditions are not possible to be transferred, which puts the Algarve as the location for excellence for the salt flower production. Finally, as in the case of geographically characteristics, the traditional knowledge of local actors required for the salt flower production, which results from the cross-sectional and identity accumulation of several sources of knowledge over time, is another of the important characteristics once it is also not subject to transfer.

6. Conclusion

The Algarve´s salt flower is a product that contains in itself many particular characteristics, which make it unique and with a recognition of excellence. It is indeed, a product that combines innovation and traditional knowledge in an innovative and competitive way. The innovation that arises from this combination between traditional forms of knowledge and innovative forms of management, communication and branding, as well as the restructuration of the modes of use – from merely used for the *marnotos* consumption to a gourmet and excellence product with a high market value – along

with its climatic requires, confer to the product an innovative and competitive dimension, due mostly to the specific natural and geographical characteristics needed to its production, that are not liable to transfer. The relationship that the Algarve has developed, throughout history, with the sea represents much more than a shared identity among agents in the region. Represents the existing trend to the use and recovery of marine resources in order to boost the local economy and regional development. This willingness to reinvent the potentialities of local resources reveals an innovative trend that goes beyond technological innovation. Above all, reveals an intrinsically innovative spirit, which functions as a latent advantage of the Algarve´s region.

The flower of salt is an example of this type of innovative strategy in the region. A product that initially benefits from the tacit knowledge and traditional of the local and regional agents, combined with the modernity of the quality, management and innovation processes, introduces a competitive advantage due to the difficulty of this type of knowledge transfer. These traditional relations strengthened the emergence of ' knowledge from the region ', which consequently, provoked a new logic of supply and demand in the markets, and a new regional capacity on viability and competitiveness in global markets. The generation of a new logic of demand and consequently, a new logic of supply in the markets is related with the social and historical context within it is produced. So, in this phase of post-modernity with the increment of the social distance of origins and the fade of tradition, consumers tend to demand for products that maintain a closer relation with the region's identity. This consumer demand allows regions to restructure their focus on its traditional competences. The region's ability to create new consumption and production paths power its viability and competitiveness in global markets.

To this type of development Hilpert (2006:586) describes as 'knowledge from the region' and defines it as the knowledge that emerges from the existing traditional relationships and a new logic of supply and demand in the markets. This leads to the creation of new knowledge that is generated through the encounter between tradition and the new opportunities that innovation can provide. The regional capacity for integrated and fortuitous exploration between the profile of the region - its accumulated traditional knowledge accumulated, its local resources, the contexts and the human capital - and the implementation of innovative practices that pass for promotion and reuse of these factors, provide the region with a greater ability to restructure and recover from external shocks, increasing thus its resilience.

Through the analysis of the case studies of the two companies in the sector it is possible to verify, although follow different approaches, that both companies are strongly committed to effective construction of innovation, not only through restructuring of the product modes of use, as well as through several bets in the manufacturing process, but also with a focus on external markets, specially markets that have a high purchase power and that are more advanced on the path to recovery and valorize traditional products with a lower environmental impact and chemical component. The centralization of public policy represents an inadequacy of instruments given the complexity of the product and the demand for particular goals for the region. Thus, it is relevant that the Algarve structured a governance logic that enable it to shed into the policy instruments its complexity, in order to increase their innovative and competitive capabilities, overcoming the constraints currently arising to its potential development.

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ON THE TRAIL OF SOCIAL MUSEOLOGY: INCLUSION & DIVERSITY IN THE MUSEUM OF SÃO BRÁS

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ON THE TRAIL OF SOCIAL MUSEOLOGY: CHALLENGING SUTAINABILITY AT MUSEUM OF SÃO BRÁS

ABSTRACT: The words Museology and Museum may exhibit different textures, tones and meanings, according to the principles and criteria with which they are brought to life in each location. We frequently find them associated with initiatives whose operating principles focus on exhibitions, objects and collections, thus prioritizing an approach of low-volume participation, at once fearful of the modern and of the social. As such, numbers (such as budgets, statistics, etc.) become the principal indicator of the quality of the projects. However, when they are applied respecting the principles of Museology committed to local development, and recognizing the particular diversity of each community, a "Museology of an inclusive texture", or Social Museology, transpires. Consequently, a museum emerges where local people define the meanings, textures and tones, a museum capable of legitimizing other forms of knowledge and presences than the curatorial. This is the case of the *Costume Museum of São Brás de Alportel* (MuT), a small museum located in inland Algarve, in southern Portugal, which is developing a management model characterized by a drive for sustainability (social, cultural, economic and environmental), freedom of action and by the sharing of knowledge, meanings and local experiences. Despite its weaknesses and contradictions, the polyphonic character of this experiment produces a set of participative practices that, beyond being a central part in constructing its sustainable character, make the Museum a true platform for connecting, recognition, and empowerment[19] of the local population, in a place for building **a** utopia.

Keywords: empowerment, recognition, Social Museology, transformation, utopia.

NA SENDA DA MUSEOLOGIA SOCIAL: DESAFIANDO A SUSTENTABILIDADE NO MUSEU DE SÃO BRAS

RESUMO: As palavras Museologia e Museu podem apresentar diferentes texturas, matizes e sentidos, segundo os princípios e critérios com que ganham vida em cada lugar. Com frequência encontramo-las associadas a iniciativas cujas lógicas de atuação focam a sua atenção nas exposições, nos objetos e nas coleções, priorizando um conceito de participação de baixa densidade, com abordagens receosas da contemporaneidade e do social. Neste conceito, os números (orçamentos, estatísticas, etc…) são por vezes o principal indicador de qualidade do projeto. No entanto, quando aplicados sob a ótica de uma Museologia comprometida com o desenvolvimento local e com o reconhecimento da diversidade própria de cada território, estes mesmos termos dão lugar a uma "Museologia de textura inclusiva", ou Museologia Social. Transparece assim um Museu onde as pessoas do lugar definem os sentidos, as texturas e os matizes do processo museológico, um Museu capaz de legitimar outras formas de conhecimento e outras presenças. Este é o caso do *Museu do Trajo of São Brás de Alportel* (MuT), um pequeno museu localizado no interior do Algarve, que desenvolve um modelo de gestão caracterizado pela procura da sustentabilidade (económica, social, cultural e ambiental), pela liberdade de ação e pela partilha de saberes, sentidos e experiências locais. Apesar das suas fragilidades e contradições, o caráter polifónico desta experiência desemboca num conjunto de práticas participativas que, além de constituir uma peça chave na construção da sua dimensão sustentável, tornam o Museu numa plataforma de encontro, reconhecimento e empoderamento da população local, num recanto aberto à construção da utopia.

Palavras-chave: empoderamento, Museologia Social, reconhecimento, transformação, utopia.

[19] Empowerment: Obtainment, increasing or the strengthening of power. Ex.: «Economic development presupposes an empowerment of the least favored layers», in Dicionário da Língua Portuguesa Comtemporânea (2001). Lisboa: Academia das Ciências/Verbo, pp.1379.

1. Introduction

For some time now we have been playing with the idea of constructing a text on the management model that is being developed at the *Costume Museum of São Brás de Alportel* (MuT). Through dialogue and shared experiences, as daily paths towards the construction of a Museology, and other ways to "ser-en-plural" (Delgado, 2009) with the museum, the desire to write emerged.

Aided by the resource of words and its scientific partners – research and thought – our objective was to systematize the type of Social Museology that has been taking form in recent years at MuT. Our inner desire was to communicate to other people, museum and worlds, to turn their attention towards our work and in this way to grow in the echoes which consequently emerge. Our target: a museological project that privileges empowerment and working through networks, along the lines of an inter-relational Museology. In short, a museum that provides the perfect excuse to debate new forms of museological participation, its causes and effects, within a broader consistent process and socially balanced development, where culture constitutes an important factor of social and economic equilibrium and the museum plays a central role in the access to knowledge.

2. Social museology and the local cause as museum semantics

In this part of the world, an old and changing Europe, we have witnessed in recent decades a seemingly orchestrated symphony of shifting economic and social ideologies.

Taking the thematic stage as a point of departure for this paper we have tried to develop our discussion (which will, nonetheless result in some inevitable non-intentional exclusion). Considering this objective, and taking into account that the kind of Museology practiced at MuT tends to be a reply to the profound exchange of paradigm that has been taking place in the fields of social science in the recent decades (Fraser, 2000; Bourdieu, 2001; Santos, 2009), it seems interesting to take a step back into the 1970s and to situate our study in the evolution and the crossing of three key concepts for museums in the 21st Century: Heritage, Museology and Development.

In effect, two UNESCO documents from the last century place emphasis on ideological and conceptual thought concerning the compromises associated with these concepts. The first formed the backbone of a huge convention on cultural heritage and privileged what we now consider a monumental and elitist notion of heritage, belonging to a hegemonic Europe (UNESCO, 1972). The second, created by the museological section of this very entity, reflects the spirit of new social causes that play a central role on both sides of the Atlantic, pushing forth the debate begun with the *UNESCO Regional Seminar on the Role of Education in Museums* (ICOM, 1958) and recognizing its social function as based on the concept of the "integral museum" (ICOM, 1972). In this last document, better known as the *Santiago Declaration*, ICOM lays its premises on a participatory Museology, capable of recognizing the museum as a dynamic instrument of social change, based on interdisciplinary work and the recognition of the museologist as a socio-political being (Cândido, 2003).

Following on from this, we can then state that the 70s witnessed the birth of sociocultural practice as playing a fundamental role in the museological process, a means to integral development. Within this framework we are able to identify new ideologies based on a participative democracy which was gaining visibility and the recognition of social capital as an axis of cohesion and development.

With the dawning of a new decade, the current debate and the natural evolution of those trends, delineated at Santiago, would result in the emergence of a new museological tendency which under the title of New Museology (*Quebec Declaration*, 1984), would propose a renewal of principles and methodologies in this field of social science (Lorente, 2012; Sancho Querol, 2013). New forms of Museology (ecomuseums, school museums, community based, neighbourhood, urban…) had begun to spread throughout Europe and the Americas. Strengthened by the creation of an *International Movement for a New Museology,* in 1985 (http://www.minom-icom.net/about-us 19.08.2013), this

current of thought structured its theoretical stance on a conceptual triad where Community, Territory and Heritage formed the anatomy of a Social Museology (Fernández, 2003; Bruno, 2010).

During that same period, the third of our concepts would finally come into being. Within a context drawn out from a still shy and early form of globalization, closely related to a growing environmental conscience, the report from the *United Nations Worldwide Commission for the Environment and Development*, "Our Common Future" which is best known as the "Brundtland Report" (UN, 1987) appears. Providing us with a critical vision of the development model which had been adopted up till then by developed and developing nations, Brundtland defined the concept of Sustainable Growth, highlighting the risk of excessive use of natural resources without considering the capacity and support of ecosystems in the present, and consequently unsustainability for future generations.

Following this initial alert, and as a result of the first *United Nations Conference on the Environment and Development* (UN, 1992), the *Rio 92 Declaration* and, above all, the *Agenda 21,* were crucial documents in pushing forth a reformulation of the development models which had been in use until then. In these documents, a strong relation between global environmental protection, its economic branching and social development could be detected.

In this sense and as a result of this ongoing international debate and of the work of activists such as John Elkington, in the 90s we witnessed the rise of the "Model of Sustainability of Three Pillars" or "*Triple bottom line*" (Elkington, 1998) to answer those challenges posed by organisations such as the United Nations.

Structured according to three key dimensions: Social (justice), Economic (prosperity) and Environmental (quality) (http://www.sustainability.com/history, 12.09.2013), this concept of sustainability revealed interesting similarities with another which had been previously established in Santiago do Chile. One word marked the difference and raised the level of compromise to the field we now occupy: the word Museum.

Despite developing from different contexts, and keeping in mind that New Museology emerged as associated to socio-cultural development, the concepts were moving closer together in rationale making it possible to establish an interesting parallel between them. In effect due to its nature and commitments, the Social Dimension of the concept of Sustainability could be equaled to the concept of Community in New Museology and the Environmental Dimension to Territory. Nonetheless, in comparing the third dimension of Sustainability (the Economic) with the third working axis of New Museology (Heritage) the process seemed to lose its natural linearity.

Within this framework of thought and reflection, we now realize the discrepancies between the Economic Dimension and Heritage in fact revealed two great absences, which would only appear in the 21st Century. The New Museology Heritage did in fact bring the challenges related with that which is today the fourth pillar of sustainable development: Culture (Hawkes, 2001; UN, 2012). Along another line, the Economic Dimension of Development introduced the challenges related with the financial sustainability to the new concept of the museum, and of Museology. The present state of affairs, where Culture would come to be recognized as an important factor in social and economic development was then launched into the future.

Henceforth, the steps taken would be marked by the progressive awareness of these absences. Heritage Studies welcomed the humanization of heritage, expressed through the broadening of the concept to include popular culture (UNESCO, 1989) still in the 80s, but also through valuing our most precious legacy, cultural diversity (UNESCO, 2001) and by recognizing the intangible dimension of our cultures (UNESCO, 2003) at the turn of the century. These were traces of a new discourse surrounding a regenerating concept of heritage (Gonçalves, 2007).

As a result of the maturing of the New Museology movement during the 90s, but also due to the characteristics and needs of contemporary societies, Museology and Sociology came into closer contact in the form of Social Museology or Sociomuseology. Heir to New Museology, this field used the museum to achieve sustainable development through the participation of communities in the

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definition, management and socialization of cultural and natural artifacts, focusing its practice on the concept of the museum as a collective project of sociological nature. It is because of this objective that its practice has been structured till this day, from a yet broader and more profound concept of participation (Moutinho, 2010) which we find in MuT an interesting example, as we will see in the next few pages.

Well into the second decade of the 21st century, and facing such great changes as those we are now crossing, the need and pertinence to reposition museums and Museology at the heart of our society becomes evident. With this in mind, and conscious of the role that the museum holds in the process of development where culture rests as one of the main axes of practice, ICOM reminds us of how "there is no sustainable growth without cultural development" (ICOM, 2013a) recognizing the potential of the museum and of heritage as "positive engines of development rather than sources of expenditure" (ICOM, 2013b). Heritage, Museology and Development are now one of the keys to a sustainable society.

It is in this context that Sociomuseology has at hand the challenge to incorporate the four axes that form the integral structure of development. The museum as a microcosm and a local lab for a society in evolution is located at the heart of the system, with the role of valuing and re-using the natural (Territory – Environmental Dimension) and the cultural (Heritage – Cultural Dimension) resources, the construction of social justice (Community – Social Dimension) and an integrated development (Museum Sustainability – Economic Dimension).

Serving as social radar of our times, citizen's platform and forum for the construction of a present and future, in the eyes of Sociomuseology it is the role of the museum to emphasize that its greatest heritage are the people (Chagas, 2013) who will contribute towards the building of an alternative globalization.

3. At a village in the Algarve interior

The *Costume Museum of São Brás de Alportel* was born in 1983 when its founder, Father José da Cunha Duarte, decided to organize an exhibition of ethnographic objects in the Fire Department of São Brás de Alportel.

With the help of the local Parish Social and Cultural Centre, a more thorough process of ethnographic collecting is started from which, in due time the idea of constructing a museum with this thematic focus is born. The objective was to pursue research and to provide information on local artifacts.

It was in 1987 that it took form, motivated both by the interest shown for local assets, but also for its mission of social support and local development, the *Santa Casa da Misericórdia de São Brás de Alportel*[20] (SCM), decided to get involved in the project, by request of Father José, accepting to look after the existing collection.

The SCM, embarked on this mission with the local ethnography in mind, and while benefiting from the donation of a 19th Century property, located in the village centre, created a new place of interest, focused on matters that the priest had brought to the attention of the village: the *António Bentes Cultural Centre*[21]. The name refers to the husband and executor of the will of the benefactor and owner of the property, Lucília Dias Sancho, now deceased.

In the hands of the Misericórdia this house would become the *Etnographic Museum of Algarve Costume* and fully operational around 1990. The idea was to have its own building with one

[20] The *Santa Casa da Misericórdia de São Bras de Alportel*, is the local branch of a nationwide organization of the same name, which focuses on social and charitable work of different types.

[21] See "Protocol signed between the Santa Casa da Misericórdia de São Brás de Alportel and the Parish Social and Cultural Centre of São Brás de Alportel" (1987) in: www.museu-sbras.com/docs-protocolo1987.pdf and the updated document in 1992 at: www.museu-sbras.com/docs-protocolo1992.pdf

employee, a small group of volunteer collaborators and a corpus of intentions that previewed the existence of revenues and the freedom to produce its own cultural agenda.[22]

On the subject, it is worth mentioning that, if on the one hand, the centennial principles of the SCM were based on the social needs as priorities in its field of action, and placed cultural heritage on a secondary level, on the other hand, its solidity provided a stable environment which favored the implementation of long term projects, based on the practice of concepts such as "cause, social conscience and citizenship" today also applied to ecology, the preservation of cultural heritage or integrated development (Sancho, 2006).

These were the first years of existence of the Cultural Centre and of its Museum from 1987 onwards. Nevertheless, it is important to mention that the poor state the building was in would lead to continual thorough renovation works between 1993 and 2003. Meanwhile, the existing collection was beginning to gain visibility for its ethnographic and heritage value. In this highly demanding field of textile heritage, the lack of organization and of inventory, as well as the deficient conditions of preservation in which most of the assets were found required the training of a small team. This formation relied on the specialized support of the *National Costume Museum*.

In fact, the bases on which this project rested – lack of properly trained staff, the nature of its ownership, the self-management model, low budget and the "collective essence" of the museum origins and collection – did not allow for analogies with more conventional models. Due to the intrinsic characteristics of the territory, the bond with the locals became indispensable, for reasons of mutual recognition, to further enrich the museological assets, while also to expand the technical team based on the diversity of knowledge and local experiences, and the self-sustainability of the project.

So slowly but surely, throughout the years and following the natural evolution of these processes the *Ethnographic Museum of Algarve Costume* developed its own dynamics based on two central profoundly intertwined pillars: the collective construction of processes related to the life of the Museum (in tone with life besides its own), and the definition of a central theme of study which allowed for the proximity of historical, geographical, social and cultural contexts of the region: the field of fashion and costume heritage (Sancho, 2006).

Simultaneously, and in recognition of the work in progress on the part of its ownership, from 1994 onwards the museum would employ a second worker.

In the same way, and according to the politics of value for difference and diversity (Abreu, forthcoming) that had started to gain strength in the beginning of the century, but also in tone with the principles and methods of Social Museology, from 2006 onwards the Museum's new name, *Costume Museum of São Brás de Alportel*, would come to reflect its local commitment.

Recognized as the guardian of a collective past and present memory and as the generator of plural dialogues committed to the safeguarding of diversity, MuT constructs itself as a Museum which is useful to the people, both in their daily lives as in its relation with the local environment. In this process, and along with the ideological values which can be found at the basis of its creation and evolution (social solidarity and Social Museology), the key to its development seems to rest in the museological and cultural autonomy it succeeded in gaining.

On this basis, and under the patronage of the Misericórdia, MuT currently relies on a staff of three (1 director and two employees) who guarantee museological management, its daily opening to the public and the maintenance of its spaces. Educational services, inventory and management of technical reservations are in the hands of volunteers with experience, knowledge and possibilities of cooperating with the "Visible Museum" (see Figure 1, pp. 12).

[22] See "Rules and guidelines" at: www.museu-sbras.com/docs-regulamento-ccab1987.pdf

In this context, the museological management is of the sole responsibility of the Museum director who organizes medium and long term initiatives, exhibitions and projects with the help of a group of collaborators of different ranking and of varied fields of specialization.

The planning and putting together of new exhibitions, having the contents well defined and the selection and collection of objects based on collective work processes, falls within the scope of responsibility of the local enterprise *Museu à Medida.* Something similar is occurring in the area of Design and Communication, whose economic viability depends on the services provided to MuT and mostly to the outside market. The *Cantinho do Museu*, the small Museum bar, functions through the collaborative concession to young entrepreneurs with interest in giving life to this part of the garden (see "Integrating Museum", Figure 1).

On the other hand, along with the exhibition and research project program (see "Long term Museum", Figure 1) MuT relies on a cultural and recreational agenda which is the responsibility of the *Friends of the Museum* who, as a result of their efforts and the value of their interaction with the institution, occupy a place of great visibility within the general structure. The Friends are a multilicultural association of about 800 members who are responsible for a vast sociocultural program, for the functioning of various autonomous groups in the fields of theatre, music, photography, fitness, history and handicraft in addition to a multilingual library (see "Day to day Museum", Figure 1), and also for its voluntary initiatives which are fundamental to the proper functioning of the inventory and heritage educational services.

Within this kind of structure, the many organizations which share museological spaces benefit from an autonomy based on individual responsibility, assuming the management, the mediation and the building of a working network.

The team, its collaborators, volunteers, collectives, organizations and users see MuT as a space for sharing, based on the development of sociocultural creativity and on the valuing of new uses of natural and cultural diversity characteristic of the region. The Museum sees itself as an experimental field of an alternative model of management which may represent a contribution to the social function of the museums within the community.

Looking into the past, we now realize how the origins of MuT shaped its present form and content. But much more so than its natural framing, its initial bond with the locals would come to be a continual essential factor in its evolution, allowing for the achievement of a sociocultural level of maturity as we will be discussing next.

4. MuT: a day to day museum, from collective strength to shared knowledge

The encounter of a number of improbable conditions at MuT caused a peculiar development in the management model. Motivated by the freedom of action, by financial autonomy as a means to the sustainability of the Museum and an example for the area where it is located, this museum today relies on high indicator levels of participation and involvement of the population.

For the reasons above, it has become an interesting case study from both the point of view of new practices related to Social Museology, as from the point of view of new models of social and cultural development structured from the base to the top.

In effect, MuT functions as a platform for the encounter and recognition of knowledge and experience of life which nurture the concept of sociocultural diversity in the Algarve interior.

In this sense, the management assumes postures and practices which aim at the development of a truly transversal model, based on the contemporary concept of the network, involving the intense exercise of the construction of the Museum as a space for the empowerment of local populations.

Keeping all these aspects in mind and within a perspective which conforms to the experimental character of this process, it is now time to ask: but what is in fact, characteristic of the *Museum of*

São Brás? What gives it its hybrid structure, somewhat like a cultural centre in permanent relation with local associations? How does it, following a cooperative model, and attempting to refuse hierarchies, still call itself Museum?

MuT satisfies most of the requirements which allow us to classify it as a Museum, both from the point of view of the parameters stipulated by the *Portuguese Museum Network*, as in the definitions and international norms defined by ICOM. However, we are not dealing with a Museum as those that we visit in big cities, dependent on historical conditions that further separate them from local community involvement. We are faced with a type of museum which is profoundly inspired on the principles and practices of Social Museology: the result of an apparently spontaneous generation and of the adaptation to the environment, or rather, a variety resulting from an evolutionary process molded by natural and human geographies of the region, and with the aim of aiding local development.

4.1. Systemizing the experience

So as to better understand the functioning of MuT, and above all the sociomuseological character of the project, we have decided to create a table which allows us to approach each of the layers that presently bring to life the Museum as it is today (Figure 1). Within it we have defined four levels of practice according to the type of social, cultural and territorial outreach, but also that of the objectives, of the agents and of the public that use it, so as to better explain the management model of our main character.

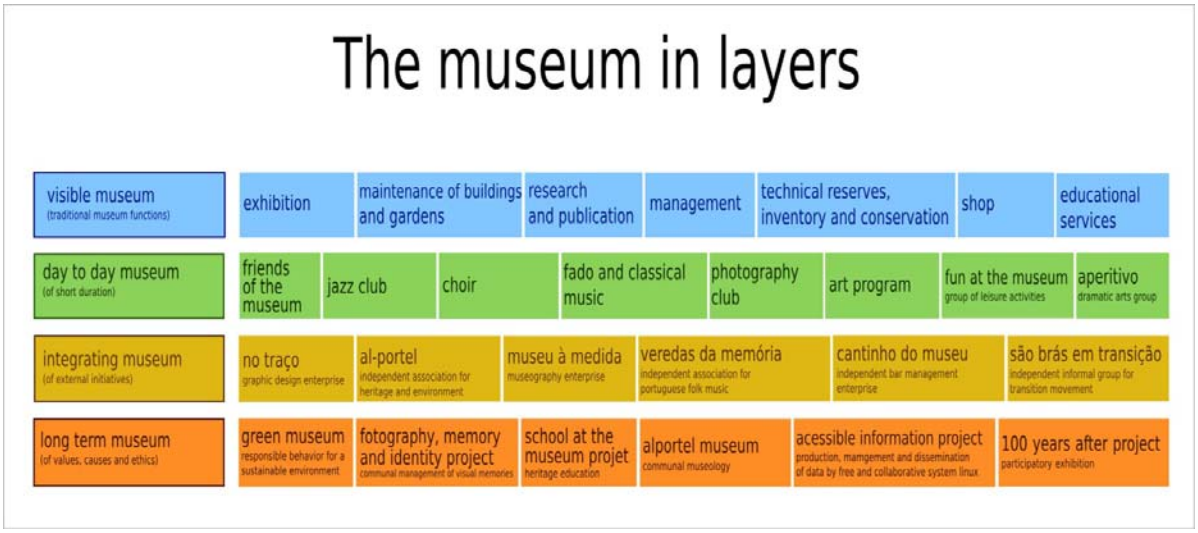

Figure 1: The cultural ecosystem of MuT seen through the layers of museological fields of action**.**

So, in the shadow of the **Visible Museum**, and within a structure which takes as its starting point the museological practices which are today globally recognized as part of the Museum, we find the dynamics related to exhibitions and catalogues, research and publication, the collections and the activities of heritage education. This Museum is especially directed at the visiting public, who are looking for more information on local culture and realities.

Yet at MuT we witness the co-existence of new skills and volunteer work, environmental and artistic projects, diverse forms of utopia, colors and intensities and also the commitment of providing a new sustainable management of the resources related with the Museum and the territory in tone with a broader and inclusive concept of culture.

The second layer of visibility, not of lesser importance, brings to life the **Day to Day Museum**. It is in this layer that the *Friends of the Museum,* thanks to the autonomy which they are given by the management and in a meaningful relation with the locals, provide training, information and

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socialization through the previously referred initiatives. The construction of this Day to Day Museum demands presence, attention and permanent listening to the needs and aspirations of those who co-habit the land with the Museum. It demands "living with" the people, meaning, identifying synergies capable of accompanying rhythms, making the most of knowledge, time and spaces, making the Museum of use to everyday life. This process has been translating itself into a growing affluence of public and users[23], through a diversified, daily use of spaces and, consequently, through the increasing revenue that result in a stable functioning of this organization, allowing for the creation of a new position: Administrator of the Friends.

At a deeper level, which combines decreased outside visibility with a growing level of local utility, another museum emerges, one which integrates within its spaces long term projects, services, new businesses, ideas, dreams and local associations, taking on the role of an **Integrating Museum**.

Within this framework, MuT performs yet another social function: that of supporting people and organizations in the realization of its individual and collective objectives, constructing through proximity and complicity a collaborative community of individual interests, which complement each other and intersect on a daily basis. This play of interaction simultaneously allows for the consolidation of a sociocultural facet of a museological project through new collaboration, diversity of experiences, cultures and skills, the creation of innovative competences, in short, the social renovation with basis on the axis of local cultural development.

At last, we find the layer of the "substratum", that is, the not so visible but still the most structuring in the construction of a long term sociomuseological equilibrium, whether for its ethical implications - in its economic, ecological, social and heritage perspectives – as for its capacity to make the museological project sustainable, contributing to the recognition of the role of the Museum within the scope of local development. What we are referring to, is the **Long term Museum**, a layer of MuT where we find the initiatives and projects which, in the long term, are giving way to other things:

- To broaden the DNA heritage in the Algarve interior (Varine, 2012) with the participation of different local collectives, whose experiences and knowledge allow us to identify other forms of heritage community capital;

- To contribute to the recognition of social experience and local culture, and from here to the construction of a local shared and inclusive knowledge (Santos, 2009), capable of responding to the challenges of contemporary societies;

- To transmit, through heritage education, the active and structured safeguarding mechanisms taking from processes of action-research that privilege alterity, intergenerational and multicultural dialogue, starting from the school-museum axis.

- To establish principles and good practices of sustainable Museology from environmental and economic, social and cultural heritage perspectives, allowing for the best use of natural resources and the re-use of different capitals coproduced with the Museum.

Subjacent to this structure we find the foundations of the edifice that is, the result of a constant effort in creation and stability in the long term, in view of achieving the recognition as a space for auto-determination and freedom, but also sustainability in its most diverse forms.

4.2. On the construction of economic sustainability

In this sense, and taking a different look at these layers of action, we have proposed to analyze the current experiences according to economic maturity in order to understand how sustainable Museology is being constructed. Four main points may be outlined:

23. Within the scope of this management model, and according to the nature and intensity of the participation, MuT distinguishes between the visitors, those who use the museum in a more detached and occasional form, and those who regularly visit and with whom an interaction is developed on a social and cultural level which is lasting and rich for both parties (Victor, 2005).

- in a first group we identify the components that reveal an intentional commercial objective and that, besides allowing for the creation of new work posts born out of cultural dynamics, constitute regular sources of income at MuT: we are talking about the Shop and the Bar (more information at: www.museu-sbras.com/bar.html*)*

- in the second group we find the initiatives that have achieved full economic sustainability, that is, that generate funds equivalent to the spending for adequate functioning. These are, the Day to Day Museum through entrance fees and other sources of income which fund the exhibitions, museography, research and publishing. Also the *Friends of the Museum* (http://www.amigos-museu-sbras.org/), which earned its majority in 2007, when it balanced out its revenues and expenses (including the previously referred work post);

- the third group includes part-time job projects that comply to a plan of economic viability at medium term, which are in the meantime funded through other projects which have already achieved economic stability. Some examples are the initiatives of the *Museu à Medida,* (http://museuamedida.yolasite.com/) and *NoTraço, Graphic Design enterprise* (http://museusbras.wix.com/design);

- the fourth group includes museum departments which on their own do not generate enough revenue to be self sustainable. It is necessary that the Museum itself produce additional funds to support their existence. Some examples are the *Documentation Centre* (Library management and archives) and the *Maintenance Service.*

5. Redifining concepts, practices and meanings in the museum

Conscious of the importance in the construction of a Museology capable of associating the social to the sustainable, at MuT we have considered a question that seems vital to us: how to materialize, in practice, the crossing of the four pillars of sustainable development and the three axes of practice that brought Social Museology to life, in order to define new logic and modes of action for the local museum.

With this in mind we have been working on the construction of an ideogram, included below in its initial phase, which besides giving a voice to these worlds, allows us to structure the challenges according to the referred compromises.

Just as has been happening with other projects at MuT, this process of reflexivity presents us with a markedly collective character that takes as its starting point the experiences of this and other local museums, as well as of multiple perspectives originally from different fields of knowledge that convene in Social Museology. All have provided observations, criticism, success and failure. Gradually we are able to see the emergence of a concept of a museum which results in the intersection of four museological dimensions that have in view environmental, cultural, social and economic sustainability (Figure 2).

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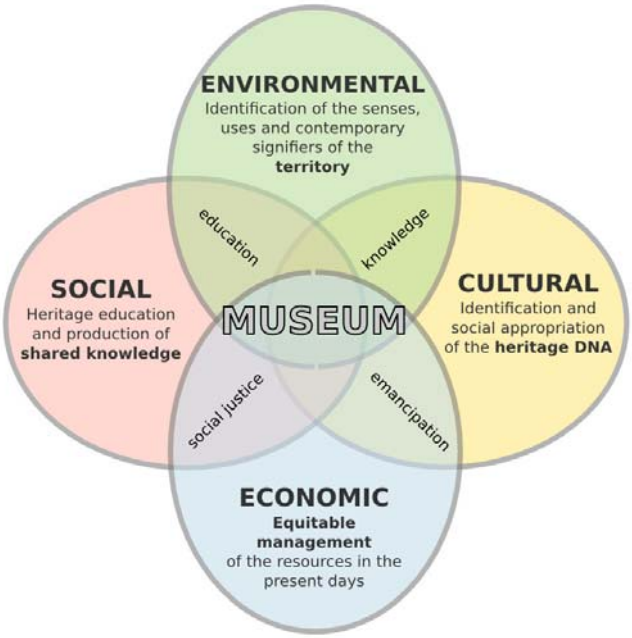

Figure 2: Ideogram showing the dimensions of the Sustainable Museum.

5.1. About the ongoing experiences

From this perspective and in order to gain a deeper understanding of some of the work at MuT, we have identified four experiences that seemingly respond to the challenge of constructing this sustainability, and that we will be displaying next:

Project *Photography, Memory and Identity* (FMId).

The FMId project was born in 2009 and established itself as an exercise in archeological memory in the municipality of São Brás, representing the interrelation between the social and cultural dimensions of development. In this sense, the Museum assumes the role of a mediator for the process with the local population, its main driving force.

Objective: To work on visual memory in the territory, from photographical archives of local families, with the aim of constructing a huge album of the community capable of decoding cultural, social and urban cartographies which have long been forgotten but are fundamental for the understanding/construction of a present looking out into the future.

Methodology: organizing weekly meetings of a small group of local citizens with the right profile and interest in this process, to work on the decoding of submerged memories through family images, dating back to various periods and social segments of the region.

Results and products: along the chosen course and while giving voice to the working group, the Museum has gradually been assuming a discreet posture, that of the facilitator and supplier of memories that are awakened through work. This project uses new information technology support platforms to facilitate the sharing of memories located within and outside the Museum, contributing to the constant enlargement of the project on different scales.

Simultaneously, a data base was created containing today around 30.000 images representing 400 local families. For this reason, Museum and community share the idea that together they have managed to create a "current account of memory" for each of the local families (more information at: www.museu-sbras.com/grupo-fotos.html).

***Museum School* Project (EMus).**

The EMUS project was born in 2008 and aims to contribute to closer ties between Education and Culture on a glocal scale. The project connects the environmental, social and cultural dimension of sustainability. Within this context, it aims to develop complementary relations that exist between formal and non-formal education, bringing the School and Museum into closer contact in view of the creation of an educational heritage project aimed at the Portuguese primary school levels (6-10 years of age).

Considering as its priority the formation of new generations and the demystification of the elitist image that children and families have of museums, this project places MuT at the service of the school, facilitating the proceedings by eliminating barriers and bureaucracies, and allowing the teaching staff **(…)** freedom of action.

Objective: To develop close relations and tighter cooperation between School and Museum, stimulating work through diversity of aspects and themes related with the territory and local cultures. The construction of an affective and lasting relationship between the Museum, the children and their families, has the aim of:

1. Valuing the natural and cultural diversity of the region, country and planet;
2. Transmitting the values of citizenship and critical thought;
3. Developing new habits and cultural needs among families;
4. Inserting the Museum into the circle of spaces and common livelihoods of local families;
5. Redefining its areas of heritage and traditional education with the aim of creating new fields of study;
6. Creating a Youth Group of *Friends of the Museum*.

Methodology: By directing local schools located close to MuT, EMUS has in view the creation of an annual agenda of activities constructed between the professor and the Museum, based on the recognized needs of school programs and on the characteristics of each class. In this way, for the duration of four academic years which represent the cycle, monthly activities on local heritage will take place.

Results and products: Identifying the proximity, constancy and assiduity as key factors in the process, EMUS has allowed, among other results, the spreading/visibility of educational activities with the community and the Museum visitors, the raising of the quality of some school activities due to the technical intervention of the Museum, a greater involvement of families with events and in educational processes, free access to teachers, students and families to various MuT initiatives, and the use of some resources and museological assets in educational activities (more information at: http://www.museu-sbras.com/escolamuseu.html).

Participative Exhibition "A hundred years later" (CADe).

Crossing the economic, social and cultural dimensions of sustainability, CADe will be the next exhibition to be held at MuT, and will be inaugurated on the 16th May 2014.

Its provisional title being ***A hundred years later***, this exhibition is a museological initiative to celebrate the centenary of the municipality of São Brás de Alportel (1914-2014). It is the second edition of a museographical experience which resulted in the current exhibition open to the public at MuT[24]. The new exhibition will rely on the same methodology as before but taking what has been learnt from the previous exhibition take a step further.

Objective: to promote the participation of everyone who because of their relation with the territory, its history and culture, accept the challenge and the museological right to cooperate in the design,

24. Algarve 19, was a museological(graphical) shared experience organized in 2010 which led to the exhibition Shadows of Light – Algarve in the 19th Century. The webpage that served as a platform for its developments is still available at: www.algarve19.yolasite.com

management and materialization of exhibitions at MuT, encouraging group work and defining new courses of action that lead to a participatory Museology.

Methodology: this type of participative exhibition takes as a starting point the opening of an internet page where a museological initiative is found, yet to be created and from which the whole process of conception and participative assembling of the exhibition is organized. Within this virtual space all the details of the process, planning, layout of the spaces, itineraries, selection of the artifacts, research, work memo and agenda will be made available. Participation is made possible through the various forums which are available on the page.

Results and products: These experiences stimulate the cooperation between a great diversity of people among which we find collectors, technicians or merely interested participants from all over the world. The previous experience revealed an important participation of immigrant groups who had left the region and settled around the world. In the same sense, it is worthy to note the transparency of the procedures regarding the organization of the exhibition, the profound level of sharing that defines the process and the incentive towards the collaborative model, as strong points of this experience (webpage of the current proceedings: www.museu-sbras.com/100anos.html).

***Green Museum* project (MuVe).**

Of the four projects here referred, MuVe could be considered that which best manages to simultaneously join the four dimensions of sustainability. In this experience we are able to verify the adoption of a set of good environmental practices that reveal relevant economic impacts to the management at MuT, and that raises awareness in the Museum and its community of the great environmental issues that currently affect our planet.

This project has totally altered the position of the Museum, namely in what concerns the separation of residues, the use of low energy consumption equipment, production of compost, the watering systems with on-treated waters, the use of bicycles for short distance travel or the use of solar and wind powered energy. Besides that, the construction of a 10Kw photovoltaic station is now complete and awaiting licensing, guaranteeing the Museum energy self-sufficiency (more information at: http://www.museu-sbras.com/museuverde.html).

5.2. Cross glances

In this play of relations and commitments between the four dimensions of museological sustainability, the present working ideogram allows us to preview an initial set of four zones of intersection, which may come to reproduce themselves in new directions, and that reflects other commitments capable of further consolidating this concept of museum.

The possibility of other forms of intersection is left open, as well as the possibility of other challenges and other answers which may contribute to the maturing of this concept.

6. Final thoughts

Our aim was to demonstrate the challenges of a Museum in construction. We achieved this by associating to the notion of Museum the idea of process, and to the notion of construction the challenges that are common to other architectures, other heritage, and other causes that deserve our attention today, because they lay the foundations of present changes.

Working from within this encounter of senses and values, absences and presences, times and forms, with a small team and low budget, which is mostly the result of the initiatives and the creative use of local diversity, is to MuT a daily exercise that responds to the challenges of a Sustainable Museology.

Social creativity, cultural sensibility and museological flexibility appear to be the keys to the process where, along with realized experiences, we also find initiatives that were unable to meet their objective because of a structure lacking minimal stability. We also learn to build the museum from these experiences.

Step by step we walk along the paths of a **M**useology that **U**nites and acts with **S**ocial conscience and **E**mpowers worlds and local voices to give sense to the word **U**topia in a country that finds in its diversity – cultural and natural – its greatest treasure.

With gratitude:

The ideas here presented are the result of a collective critical construction in which Afonso Cunha, Dália Paulo, Glória Maria Marreiros, José D´Encarnação, Mário Moutinho and Rui Parreira accepted the challenge that helped us to put this article together.

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FINANCING OF COMPANIES AND THEIR INNOVATIVE PROCESSES

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FINANCIANDO AS EMPRESAS E OS SEUS PROCESSOS INOVADORES

RESUMO: A investigação mostra que as restrições financeiras podem restringir os processos de inovação nas empresas. No âmbito da região da Extremadura (Espanha), o nosso objectivo central não só concentra-se em verificar se o financiamento restrições forma prejudicar a inovação, Mas para fazer uma análise comparativa do poder desta barreira com relação aos outros não-barreiras financeiras propostas; por outro lado, temos a intenção de avaliar o impacto dos subsídios públicos para a inovação em uma região integrada no grupo conhecido como menos desenvolvidos da UE. Foi aplicado uma metodologia com base num questionário dirigida àqueles responsáveis pela inovação da Extremadura empresas que permitiu obter um feito acima de 524 empresas Extremadura, uma amostra estatisticamente representativa do tecido empresarial da região. Os resultados confirmam que a barreira de ato de restrições financeiras, tanto em seu volume e seu custo, mas com intensidade semelhante a outros obstáculos tais como de alto risco econômico e a falta de apoio das administrações públicas. No que diz respeito a último, detectamos uma elevada falta de subsídios e auxílios estatais à inovação, algo surpreendentes e graves repercussões que nos levou a criar o último dos objectivos. Conclusões finais permitem que você colaborar com as autoridades públicas, especialmente com o governo regional, em sua busca por um modelo produtivo efetivo para a Extremadura, com base na inovação como beneficiar sua empresas competititiva.

Palavras-chave: Extremadura, financiamento, inovação, subsídios públicos.

FINANCING OF COMPANIES AND THEIR INNOVATIVE PROCESSES

ABSTRACT: The research community shows that financial constraints may restrict the processes of innovation in companies. For the scope of the region of Extremadura (Spain), our central objective not only focuses on checking if financial limitations way detract innovation, but to perform a comparative analysis of the power of this barrier with respect to other non-financial barriers proposals; on the other hand, we intend to gauge the impact of public subsidies for innovation in an region that is integrated into the group known as *least developed* by the EU. It has implemented a methodology based on a questionnaire sent to the managers of innovation in the Extremaduran firms that has allowed us to obtain a sample of 524 companies, statistically representative of the regional entrepreneurship. The results confirm that the financial constraints act as a barrier, both in volume as its cost, but with intensity similar to other obstacles such as the economic risk high, and the lack of support from public administrations. In relation to the latter, we detect a high ignorance of public grants and aid to the innovation, something surprising and with serious repercussions that has led us to raise the last of the stated objectives. The final conclusions allow us to collaborate with the public authorities, especially with the regional government, in his search of a effective productive model for Extremadura based on that innovation is the source of the competitive advantage of their companies.

Keywords: Extremadura, financing, innovation, public subsidies.

1. Introdution

Much of the empirical evidence points to financial constraints as a barrier that cuts the innovative capacity of companies, even though it's an agenda of research still open (Savignac, 2007) due to the lack of consensus on this behavior (Cincera and Ravet, 2010).

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If the existence of this barrier was confirmed, his effects would ballast the growth of the pymes, but in major measurement in a financial system as Spanish much faced to the banking (Becchetti and Trovato, 2002). On the other hand, and since the number of innovative companies of a Spanish region represents the principal factor of the technological results of the same one (Baumert and Heijs, 2002), if these financial obstacles were limiting the creation of companies that innovate, they would act ballasting the technological output of the above mentioned territory. The above mentioned worsens in a context as the current one characterized by a competitiveness based in the intangible ones, contributed by the innovative processes (Johnson et al., 2010). Hence, finally, there exists an important consensus about which the innovation redeems a determinant role in the competitive capacity in average and long term of the companies and territories (Porter, 1990; Castillo and Crespo, 2011): the essential adaptation of the company to the environment demands to innovate (Escorsa and Valls, 2003).

Conscious of this, the EU (2010) proposes to itself in his Strategy 2020 to check and to consolidate the role of the instruments of the EU destined to support the innovation, as well as rationalizing the administrative procedures to facilitate the access to the financing, especially of innovative projects and pyme. In sum to impel a strategic common frame of the EU of the financing of the innovation.

The Ley de la Ciencia, Tecnología e Innovación de Extremadura (2010), along witgh the new Estatuto de Autonomía de Extremadura (2011), proclaim the promotion of the managerial innovation; this every time, still having present that the effects of the economic crisis have cut the activities of innovation away in the whole country in 2009 for the first time in the history (Informe Cotec, 2011), it is proved that the reduction of the innovative intensity in Extremadura in the period 2008-2010 has detained the process of convergence towards the valuations of innovation of the countries and European regions of reference (Informe sobre Innovación en Extremadura, 2011).

El presente trabajo se enmarca en este escenario al plantearse como objetivo central determinar si las restricciones financieras recortan la innovación así como calibrar la influencia de éstas frente a otras barreras propuestas de carácter no financiero. En línea con esto, y debido a que Extremadura forma parte del grupo de regiones conocidas como *menos desarrolladas* de la UE, terminaremos abordando el ámbito de las subvenciones públicas a la innovación empresarial como instrumento que la fomenta.

This study would throw light on the nature and impact of the financing on the investigative activities of the Extremaduran companies, diagnosis that it would help to face to the public power, innovative agents, companies and other actors of the Sistema Extremeño de Ciencia, Tecnología e Innovación (SECTI). This voice would come to join the only investigative precedent of empirical existing nature in this ambience in the region[25] (Infome sobre Innovación en Extremadura – IIE-, 2009, 2010, 2011, 2012), although centred on other targets, reason for which we will realize an analysis compared in the measurement in which both allow it with the intention of reinforcing this pretension to guide the decisores involved in the Extremaduran innovation.

For our sample period (2010-2012), the results are aligned largely with those obtained by the IIE (2012), with identical period of analysis, in the sense that both identify the lack of financial resources to innovate, in general, and from public aid, in particular - even more than the former and worsened during the economic crisis-, as serious inhibitors of innovative business processes. This evidence in tune with national results (Informe Cotec, 2011, 2012, 2013), which detect for 2010-2012 as financial limitations act strongly contracting innovation, particularly in the form of insufficient culture of financial markets in Spanish to meet the innovation -and not only because traditional financial sources are inadequate to finance innovative projects (Giudici and Paleari, 2000)- and poor interest of public administrations in the development of emerging technologies.

Para nuestro período muestral (2010-2012), los resultados se alinean en gran medida con los obtenidos por el IIE (2012), con idéntico período de análisis, en el sentido de que ambos identifican a

[25] The scarcity of empirical research on regional innovation systems is common throughout the country. Some references may be Heijs (1999), sent and Heijs (2002), Buesa et al. (2002) or Heijs (2002).

la falta de recursos financieros para innovar, en general, y procedentes de ayudas públicas, en particular –aún más que el anterior y empeorado a lo largo de la crisis económica-, como graves inhibidores de los procesos innovadores de las empresas. Esta evidencia sintoniza con los resultados nacionales (Informe Cotec, 2011, 2012, 2013), que detectan para 2010-2012 cómo las limitaciones financieras actúan contrayendo fuertemente la innovación, particularmente en forma de insuficiente cultura de los mercados financieros españoles para atender la innovación –y no sólo porque las fuentes financieras tradicionales sean inadecuadas para financiar proyectos innovadores (Giudici y Paleari, 2000)- y de deficiente interés de las administraciones públicas por el desarrollo de tecnologías emergentes. As regards the first aspect, Filippetti and Archibugi (2011) point at the development of the financial system as one of the structural factors capable of compensating the effects of the economic recession on the investments in innovation in Europe.

Our study is based on a process of consultation to the Extremaduran companies realized in June, 2013 that explores them about his innovative conduct. The wide resultant sample is formed by 524 companies.

The work starts by being framed in the theoretical ambience from the review of the literature previous. After describing the applied methodology, we penetrate into the obtained results and his interpretation. It will close with a few final considerations of interest.

2. Evidence previous

The list of definitions of innovation that offers the literature turns out to be very extensive (Schumpeter, 1942; Nelson and Winter, 1982). We take refuge in the Manual de Oslo (2005) on having considered being the introduction in the company or in his exterior relations of a new product, process, form of commercialization or method of management –four existing types of innovation-.

The evidence demonstrates that the uncertainty and the strong informative asymmetries between agents and agents financial backers (Hall, 2002)[26] –and the problems of adverse selection and moral risk that originate for the above mentioned (Stiglitz and Weiss, 1981)-, as well as not immediate comeback of the inverted funds and a short-sighted evaluation of the viability of an innovative project on having applied classic criteria of update of the clear flows of box to these intangible investments that subestimate the real comebacks of the investment (Christensen et al., 2008) and to guide by the short term and his distaste to the risk (Castillo and Crespo, 2011), they represent characteristics inherent in the innovative companies that can provoke difficulties at the time of obtaining external financing; between them, there is included a major cost of these funds (Harhoff, 1998).

This reality raises the hypothesis of a positive affiliation between the innovative activity and the such available financing that, after be confirming successfully in numerous works (Hall, 1992; Himmelberg and Petersen, 1994; Mulkay et al., 2001; Czarnitzki, 2006; Savignac, 2008; Ughetto, 2009; Desyllas and Hughes, 2010; Czarnitzki et al., 2011; Castillo and Crespo, 2011), they would turn to the restrictions of financing in a critical variable to innovate. Investigative results that demonstrate the opposite (Harhoff, 1998; Bond et al., 1999) they prevent to the investigative community from accepting this consideration of financial inhibitor of the innovation.

But empirical research suggests many agents such as determinants of the decision to innovate of the companies. According to her, our proposal of barriers (Schumpeter, 1942; Symeonidis, 1996; Cohen and Levin, 1989; Galende and Suárez, 1998) is collected in the Table 1.

[26] Due to problems of appropriability, innovators are reluctant to share your news with investors outside the company (Mohnen et al., 2008).

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Table 1: Proposal of determinant agents of the managerial innovation

Determining factors		**Justifying reasons arising from a positive relationship**
EXTERNAL FACTORS	Size of the company	-The high fixed costs of innovation can only be covered with high sales
Hypothesis of Schumpeter (1942)		-Economies of scale and scope -The diversification reduces the risk -This determines the access to foreign finance
	Concentration of the market	-Funding of I+D with equity -Apropiabilidad of the results
EXTERNAL FACTORS	Demands and dimension of the market	-The market dimension implies higher sales and benefits of innovation
Características industriales	Technological opportunities	-Advantages of belonging to specialized sectors -Intra-industriales and extra-industriales spillover effects
	Appropriability conditions	-Conditions that allow capturing the benefits of innovation and reduce costs of imitation
INTERNAL FACTORS	Physical resources	-Capital intensity
Recursos de la empresa	Financial resources	-Absence of liquidity constraints -Possibilities of financing with equity -Access to funding
	Intangible resources	-Human resources -Commercial resources -Organizational capacity

Source: Corchuelo, B. (2010).

The research complements the findings of the existence of financial brake to innovation with the analysis of the biases that could manifest itself in this relationship. Thus, the configuration of the system of financing of the country affects the intensity of these barriers, lower in countries like the UK -because of the strength of its capital markets- and Japan -its integrations between banks and companies, or between companies- (Becchetti, 1995). Without entering underlying causes, Cincera and Ravet (2010) discover that large US companies do not seem to support financial obstacles to innovate, while yes are important barriers in the large EU firms.

In Spain, a country of high weight of the Bank financing in business investment, innovative companies -and to a greater extent the micro- faced serious restrictions on the access to finance because of the rejection of the risk of financiers, the claim of a profitability of the investment in the short term and resigned to become involved in the management of the business (Castillo and Plana, 2010).

The size of the innovative company is negatively linked with financing difficulties. SME is vulnerable due to their failure of security and information between investors and funders -which also increases the resources-, their need to resort to -usually low- equity to finance these investments and the lack of financial sources specific to innovate -especially new forms of capital- (Castle and Crespo, 2011). As well as this link size is often regarded as a proxy for the financial restrictions (Crépon et al., 1998) because, in addition, that large companies can amortize sunken costs involving innovation through its high volume of sales, on the one hand, and that it is easier to finance investments innovative large enterprises since they are well known and generally enjoy good relations with external funders[27]. In short, already Schumpeter (1942) determined a positive relationship between innovation and size.

For Coad (2010), who refers to the differences in funding depending on the stage of the life cycle of the company, the justification is that upper age and large enterprises -with moderate growth, in

[27] The IIE (2010) shows the directly proportional relationship between the size of the company and its innovative character, but does not analyse the barriers financing-size.

addition- enjoy higher incomes than financial needs, conversely that smaller and younger firms. Brown et al. (2009) document for US and high tech companies that financial constraints have an impact on the innovative young companies, not the mature investments.

Finally, the innovation represents an excellent factor of the global structure of the sector after exists the possibility that it affects to the competitive forces that define the above mentioned sector (Porter, 2002): the innovation is inherent in the competitiveness and this one is associated with the sector.

3. Methodology

With regard to the methodological design, has been applied a methodology based on a questionnaire addressed to those responsible for innovation of Extremaduran businesses. The design and content of the questionnaire are fundamentally based on the Encuesta de Innovación Tecnológica -EIT- (INE), with additional information from the survey Encuesta sobre Estrategias Empresariales -ESEE- (Fundación SEPI)[28]. Both have suffered a fit and improvement to suit our objectives.

Since we deal with an analysis on innovation, this study has centred on two big sectors that represent the best expression of innovation in the region: Industry and intensive Services in knowledge. The sample has been prepared from the Extremaduran universe of the Directorio Central de Empresas (DIRCE) to date January 1, 2012 and has continued the technical guidelines applied by the Barómetro Empresarial del Gobierno de Extremadura in order to generate synergies with him.

The resultant sample, representative[29], it is constituted by 524 companies turned out of applying the method C.A.T.I. of telephone interviews (Table 2); these were carried out during June, 2013 basing on the elaborated questionnaire. For the formation of the sample, it has been necessary to contact with 3.333 Extremaduran companies, which represents an index of participation of 15,72%.

Table 2: Factsheet

Sample	524 firms
Sampling error	±3, 30 for the whole of the sample (confidence level 95% and maximum indeterminacy p=q=50%).
Sampling methodology	The sampling process is carried out by means of stratification with affixation aproporcional depending on the size of the company, the sector of activity and the geographic location of the company. We specify the weighting of each of these strata factor in order to obtain statistical representativeness according to the universe under study.
Methodology	Telephone computer-assisted personal interview (C.A.T.I. system)
Average length of the interview	11,21 minutes.

There is a high degree of concentration in SMEs and industrial enterprises, in line with the population given the representativeness of the sample by group activity and number of employees (Table 3).

Table 3: Sample distribution by sector of activity and number of employees

	1 to 9 employees	10 to 49 employees	50 to 199 employees	200 and more employees	TOTAL
Industrial	356	84	14	2	456
Services (*knowledge-intensive*)	59	8	1	0	68
TOTAL	415	92	15	2	524

[28] In addition, the IIE (2009, 2010, 2011, 2012 and 2013) were consulted.
[29] The sample is representative after verification with the Wilcoxon Test: is not significantly different from the population according to the sample sizes.

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To the items of the questionnaire applies a Likert scale with ratings of 0 (nothing) to 10 (very much) in order to quantify the qualitative variables to address your analysis (Cañadas and Sánchez, 1998).

We will apply a descriptive analysis, but due to that not only describe the impact of barriers on innovation but compare it interests us, we use in addition to the cross tabulation of data. Specifically, we will implement contingency analysis this block since the variables that we are going to match in the bivariate analysis (innovation as each barrier-dependent variable) are categorical in nature. We will measure the degree of existing asociaciación between both variables as well and will do so by means of statistics to summarized the information contained in the cells of the corresponding contingency table. We will finish evaluating whether this relationship is statistically significant.

This exploration of the data will be complemented by a neutralization of the three listed above control variables: size, sector and age - as well as industrial area that allows the design of the questionnaire - intending to inquire if these control variables discriminate against the results of the original association.

As for the definition of variables, we will use two dependent variables of innovation: *the company has innovated in the past 2-3 years* (I1) and *the company expected to innovate in the short and medium term* (I2).

In order to standardize the results with the extracted from the ESEE for comparative purposes, we apply the criterion of the number of employees to measure the size with the indicated intervals. The sectors chosen for study by their greater propensity to innovate have been the industrial -divided in agri-food, energy and other industry- and the knowledge-intensive services. With regard to the variable age of the company, the wide spectrum of years of constitution of the companies advised its grouping according to the historical reference of the economy of the country. According to Matés and González (2006), we set the economic stages as shown in Table 4.

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Table 4: The ages of enterprises clustering

Period	Name	Stage
Prior to 1960	(E1)	Before to the economic development
1960-1974	(E2)	Economic development
1975-1995	(E3)	Political transition and international openness
1996-2007	(E4)	Spain in the Monetary Union
2008-Actuality	(E5)	Economic crisis

4. Analysis of results

We start by stating that 40,5% of the polled companies declare to have realized some type of innovation in the last two three years opposite to 59,5% that not.[30]

Next, we prepare to link the targets raised with the items of the questionnaire that allow to fulfill them.

[30] In 2011, 33,3% of the polled companies were declaring to have realized some type of innovation in the last three years opposite to 66,7% that not (Guerra, 2013), which represents an advance of interest.

I-Target 1: comparative analysis of the barriers to the innovation

- Ítem A: *Of the following factors, indicate in what grade he thinks that they suppose a barrier or difficulty for the achievement of activities of innovation in the company.*

Los factores propuestos son los siguientes:

FFI: Absence in financing internal	IFN: Insufficient flexibility of rules and regulations
FFE: Absence in external financing	POE: Problems of organization of the company
CE: High costs	DPI: Difficulty to protect the innovations
FPC: Absence in qualified personnel	RI: High risk of imitation
FIT: Absence in information about technology	FA_AAPP: Lack of support from public administrations
FIM: Absence in information about the markets	FDI: Lack of demand for innovation by the customer
DCE: Make difficult to find cooperation with other companies	AMI: Absence of mediators of innovation
RE: Economic high risk	MNI: Market conditions do not imply the need to innovate
MEE: Markets dominated by established companies	IFN: Insufficient flexibility of rules and regulations

With ends of analysis and proposal of political of innovation, it results from interest to structure this set of parameters candidates for obstructing the innovation. For it, we apply two classifications (Manual of Oslo, 2005):

1. In accordance with the ambience in the one that produces to himself the obstacle, we group them in three categories:

- Economic: FFI, FFE, CE, RE, MEE, FDI, MNI
- Interns of the company: FPC, FIT, FIM, DCE, POE, DPI, RI, AMI
- Juridical: IFN, FA_AAPP

2. According to his nature, they are distributed in accordance with four blocks:

- Factors of cost: FFI, FFE, CE, RE
- Factors linked to the knowledge: FPC, FIT, FIM, DCE, POE, AMI
- Factors de market: FDI, MEE, MNI
- Institutional factors: IFN, RI, DPI, FA_AAPP

Si we examine the results (Table 5), we verify how the companies qualify the financial difficulties not only as barrier to innovate, but they exercise a powerful influence (Figure 1): the central measurements of these variables are located between 7 and 9. Nevertheless, we verify the existence of certain problems with the coefficients of change that alter the quality of these central values[31].

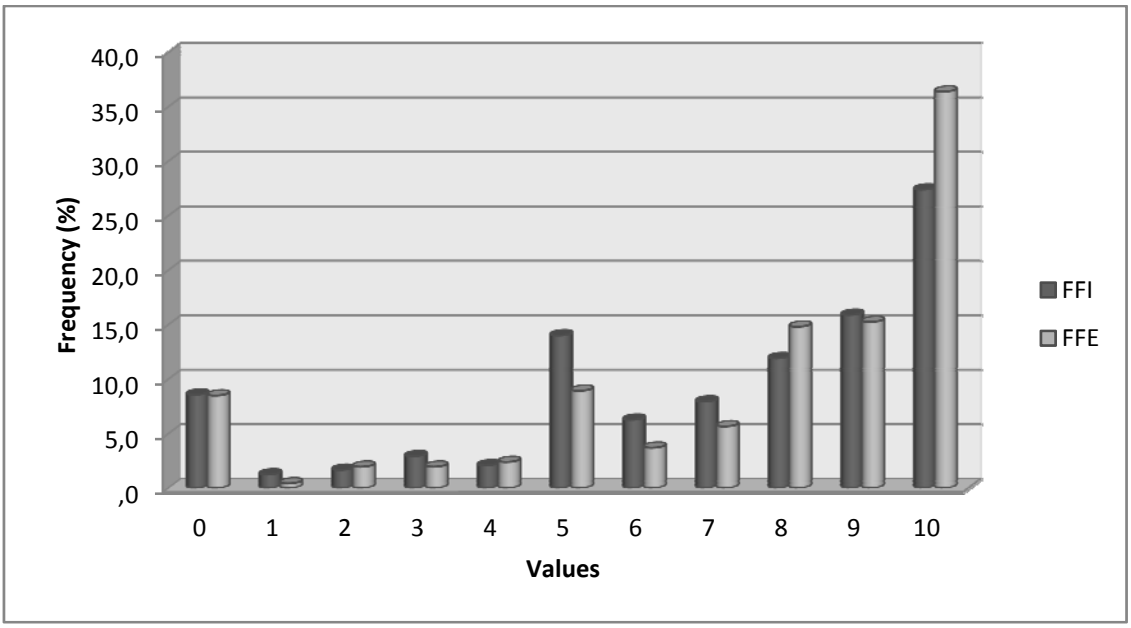
Table 5: Estatistics of barriers

		FFI	FFE	CE	FPC	FIT	FIM	DCE	RE	MEE	IFN	POE	DPI	RI	FA_AAPP	FDI	AMI	MNI
N	**V.**	478	459	480	463	462	462	407	460	416	403	467	328	405	467	436	313	348
	P.	46	65	44	61	62	62	117	64	108	121	57	196	119	57	88	211	176
Mean		7,0	7,5	7,3	3,4	4,4	4,8	5,1	7,0	6,3	6,5	2,9	4,0	5,2	7,8	5,9	5,5	5,7
Median		8,0	9,0	8,0	3,0	5,0	5,0	6,0	7,0	6,0	7,0	2,0	4,0	5,0	9,0	6,0	6,0	6,0
σ		3,1	3,1	2,4	3,3	3,1	2,8	3,2	2,5	2,6	2,4	2,9	3,0	3,3	2,6	2,9	2,6	2,4

Source: prepared by autor.
Notes: N: nº firms: **σ**: standard deviation; V.: valid; P.: lost

[31] To measure the quality of the average, we will apply coefficients of change (Standard deviation/Mean). We will have in consideration, considering the analysis of later risk, only those average values which coefficients of change turn out to be low or equal to 2. We anticipate that the averages calculated in the work turn out to be acceptable, therefore, except FFI, FFE, CE, RE, MEE, IFN, FA_AAPP, AMI and MNI.

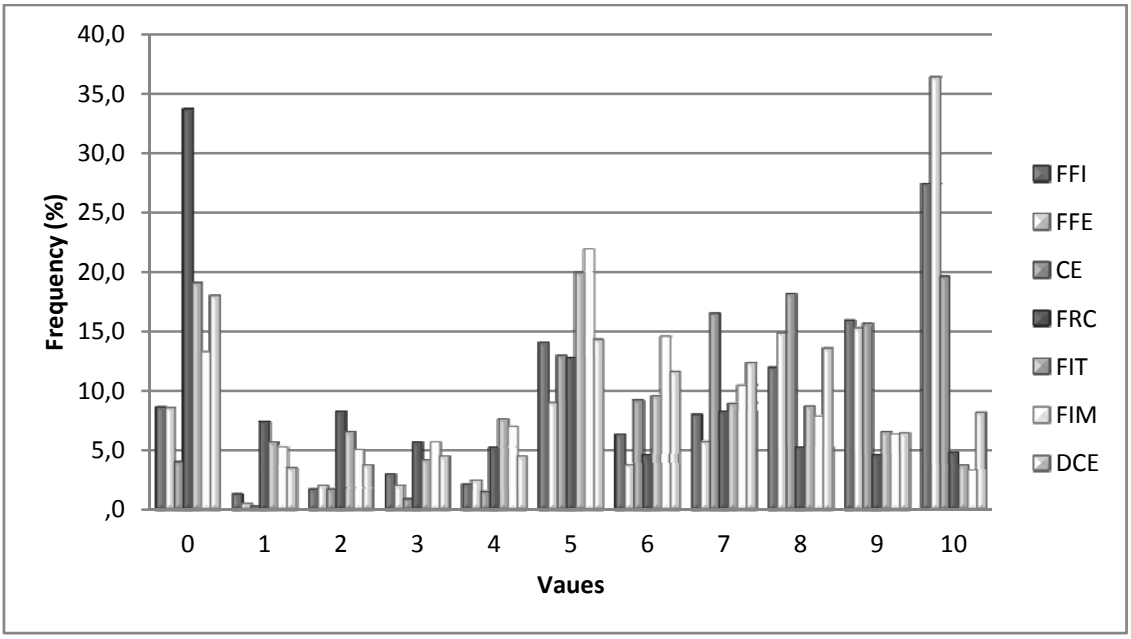
Figure 1: Frequencies of responses (%) to FFI and FFE



Source: prepared by autor.

In the lack of internal financing, accumulated in the stretch [5, 10], we appreciate a big concentration in the stripe of understudy [9, 10] on having been voted by 43,3% of the polled ones. A similar conduct is observed in the lack of external financing, with an even top average because it overcomes FFI in the top values: the companies perceive a major effect on the innovation of the lacks of the financing obtained out of them (FFE) that the generated one by they across his productive process (FFI).

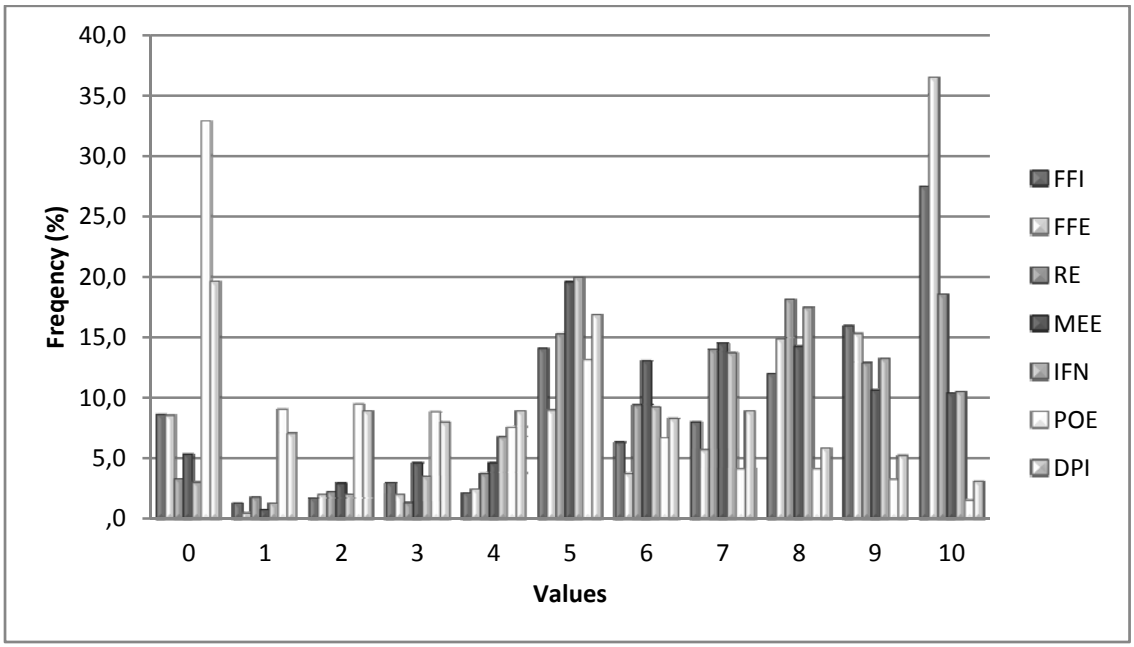
Figure 2: Comparative of frequency of responses (%) - I



Source: prepared by autor.

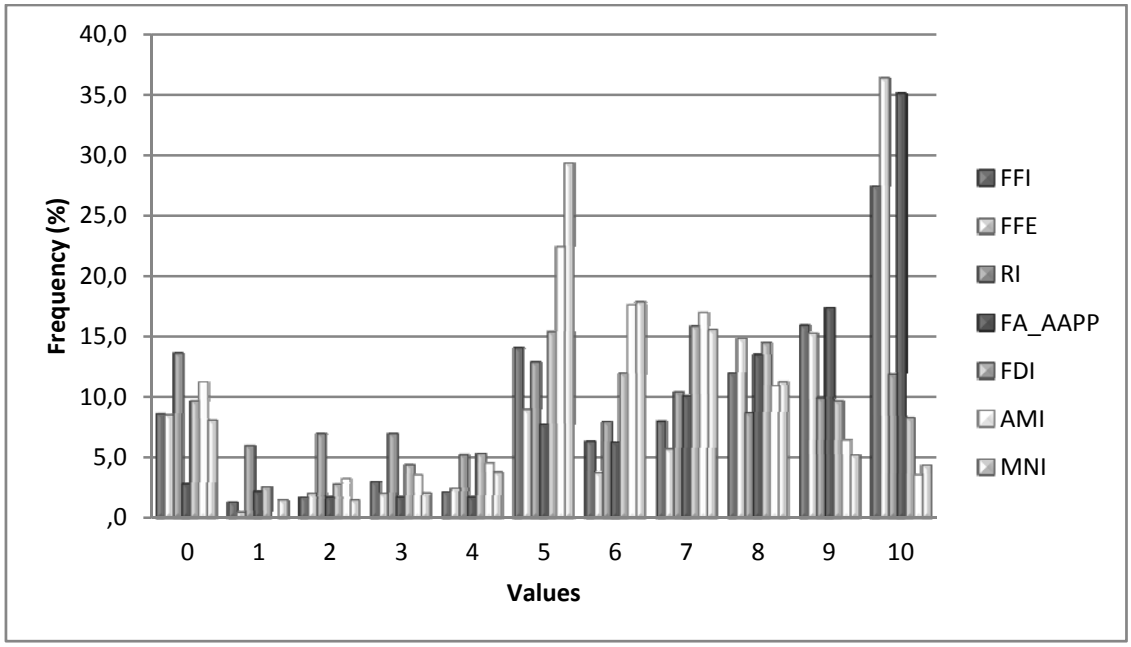
Frequencies (%): percentage frequencies as regards the responses that offer a value, that is to say, the sample except the companies that they Do not know / Do not answer (Ns/Nc).

Figure 3: Comparative of frequency of responses (%) - II



Source: prepared by autor.

Figure 4: Comparative of frequency of responses (%) - III



Source: prepared by autor.

In the comparative one with the rest of candidates for barrier (Table 4, Figure 1, 2 and 3), we find a similar behavior in the factor *high costs* (CE), in clear affiliation with the absence of financing (internal and external) as one of the big costs associated with the innovation: so obstacle turns out to be the lack of financing as the high cost of this one. Not in vain three variables are of economic ambience and cost nature.

In line with the intensity of FFI and FFE, even with higher secondary to them, is the *lack of support from public administrations* (FA_AAPP) variable: which present the highest mean of all barriers

anticipates the role as representing the public subsidies in the financing of innovation in this territory and seems to show us to a business that, despite receiving significant public funds, continues to require more support from the public authorities[32]. *Innovate is a high economic risk* -again economic factor and cost- becomes this place featured on one of the causes of the low tendency to innovate the Extremadura entrepreneurship.

Continuing with these average values, and with a similar intensity between yes, they are perceived as obstacles to introduce the *insufficient flexibility of norms and regulations* (IFN), as a frontal attack to the excessive legal regulation of the act of innovating, followed by the *existence of markets dominated by established companies* (MEE), a powerful argument that these companies offer not to innovate. They follow them, for this order but very next between yes, the perceptions of which the *absence of demand of innovation for the client* (FDI), *the conditions of the market do not imply the need to introduce* (MNI) and the *mediators' absence of innovation* (AMI) brake his innovation. The fact that the company should perceive an absence of demand of innovation for the client he seems to confirm the reaction gathered for MNI[33]: these companies yes that are convinced of not need to innovate because it is not demanded; perhaps the economic crisis is provoking a reduction of the requirements of innovation for the market much worried by the prices, at the same time that he is encouraging a spirit I reactivate and not proactive of this empresariado towards the innovation. Let's observe how the brakes FA_AAPP and IFN walk in the same direction –ineffectiveness in the performance of the public administration on the subject of innovation- while MEE, FDI and MNI imply to the market in the rejection to innovate, but they perceive major impact in his innovative activities on the part of the first group.

With averages concerning 5, we find next a group of hobbles like they are a high *risk of imitation* (RI), *difficulty to find cooperation with other companies* (DCE) and *absence in information about the markets* (FIM). We verify how the first one represents an impediment of institutional character and two following ones are related to the knowledge but the three are a part of the group of factors linked to the internal ambience of the company. As regards DCE, we must add that the Extremaduran companies look for his allied forces for the activities of innovation in other companies of his environment but not in public institutions of the SECTI –as they can be the technological centers or the University of Extremadura-, which indicates the high grade of ignorance of these organisms (IIE, 2012).

The least valued obstacle turns out to be the *problems of organization of the company* (POE), perhaps in allusion to it known that turns out to be this variable for this majority of companies that have not innovated in the last years.

Of three categories between which we were distributing all the obstacles attending on his ambience, and stopping to the margin FA_AAPP, the economic factors stand out. Factors of internal nature follow him, but they are the causes of juridical nature those that head the barrier list on having been presided by FA_AAPP and one IFN very well placed in the ranking: the empresan indicate to the performance of the public sector as maximum impediment to his innovative initiatives -although very next to the economic factors-.

According to its nature, and excluding FA_AAPP, see how are the cost factors which are considered in greater depth on innovation -in line with the high weight of the economic variables of the previous classification-, followed by those related to market and finally those related to knowledge. But again the perception that the main burden of their innovative activities is the lack of support from authorities (FA_AAPP), as well as the position occupied by the lack of flexibility of the rules and regulations (IFN), can be converted to institutional factors in the most responsible for the innovative weakness; in a way matched with economic factors block -which includes financial constraints-: this

[32] The relevance of factors CE, FA_AAPP and FFI/FFE is confirmed, and in that order, by the IIE (2009, 2010, 2011, 2012) as the most outstanding brakes to innovate.

[33] The relevance of MNI has been accentuated by the economic crisis (IIE, 2010).

situation is aggravated when we know the cost and institutional factors affecting all types of innovation.

In short, companies largely scored in the range [5, 10] to all barrier proposals submitted for approval, confirming them as innovation inhibitors and therefore offer us important clues about the origin of the relatively weak tendency to innovate the Extremadura entrepreneurship. The lack of funding -especially funds external- occupy the place more prominent set of barriers -together with CE, related with them since contains financial costs-, but it is the lack of support of the administrations that is configured as the main obstacle to innovation in the region -although very close to the three concerned-.

The discriminant analysis offers us more likely to dive into the results. The results for the financial obstacles [34](Annex, Tables 6, 7, 8 and 9) as well as the rest of proposed obstacles (Annex, Table 9) are summarized as follows:

- For I1 – Barrieres
    - Relations of recent innovation with the perception of obstacles to innovation faced are weak. Of the fact that these factors that get innovation are contrasted by the prior evidence, so it is as least doubtful result, follows a dissociation between the actual practice of innovation and barriers that make difficult it that you can point to that estimation made by companies of the need to innovate exceed the limitations that are. We must not ignore the pursuit of the strengthening of its competitiveness in a context of economic crisis.
    - This confirms the minus most of these associations, i.e., as companies have practiced innovation have to a lesser extent punctuated impediments to perform: their willingness to innovate have driven them to fight to achieve it or convince of overcoming such barriers. Concern, however, the high scores assigned to barriers for companies that do not have innovated in the past years.

Only the difficulty to protect innovations (DPI), the high risk of imitation (RI) and the lack of demand for innovation by customers (FDI) are shown with positive sign, suggesting that it may have been treated factors quite difficult to overcome in the innovation processes of the companies that have innovated but little valued difficulties a priori by the companies that have not innovated[35]; for the latter group, and given that the relationships of innovation with these barriers they are not statistically significant, it could also be interpreted as a result characteristic only of the sample but not generalizable to the population.

- If we rely on the results, we can consider genuine relationships -extrapolated to the population- those corresponding to FFI, FFE, FIT, FIM, RE and MEE. The remaining associations are not significant statistically, so it may be spurious relations and, therefore, we must consider them with due caution. In short, and considering I1, and whatever that is to consider other empirically demonstrated, we can say that the companies in this region are considered obstacles to innovate the collected in Table 10, albeit with relatively low impact.

[34] Due to space limitations, we find it impossible to offer the tables by contingency of all relationships of I1 (I2) (original and neutralized) barriers, as well as that collected their respective statistical - only include FFI and FFE statistics due to their weight at work, as well as a synthesis of the remaining barriers. However, are available to the reader requesting by mail to the author.

[35] However, the DPI contingency table shows, for companies that have innovated in the past years, most of its established positive residues on the central band (4-6) of the Likert scale, indicating no excessive difficulty in overcoming this obstacle; those that do not have innovated, they give them or rather limited value as ballast (1-3) or high (9-10). Positivity for RI comes especially from companies that have not innovated in recent years for the values (1-5) of the scale, and the IDF of innovative companies in their values-high (7-10).

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Table 10: Obstacles to innovation in Extremadura to I1

Lack of internal financing (FFI)	Lack of internal financing (FFE)	High costs (CE)	Lack of information technology (FIT)
Lack of information on markets (FIM)	High economic risk (RE)	Markets dominated by established companies (MEE)	

Of them, the older associations occur among I1-FFI e I1-FFE; i.e. two barriers that offer more resistance to innovate are those related to the financing of innovation, either external or internal - more of obstacle- funding. The paradox that arises in this economic crisis between the pressing need for innovation as a business survival pathway and the difficulties of getting financing can be found behind this evidence despite the negative sign of both relationships.

According to previous classifications of the barriers, and just like that in the descriptive analysis, check that the nature of the resulting factors is mostly economic -FFI, FFE, RE, MEE-, against the two remaining FIT and FIM, relating to the internal environment of the company. Applying the second classification, most of the factors present a cost nature -as in descriptive exploration-, followed by those related to knowledge -FIT and FIM- and the market -MEE-, reverse the descriptive analysis. In short, the most relevant finding in relation to this descriptive analysis is the weakness and lack of statistical significance of the innovation (I1, I2) relationship with the FA_AAPP agent as well as IFN, formerly very well positioned[36], so we can not generalize two results; This is in addition to the strong relationships, even if not intense, listed in Table 10.

- For I2 – Barrieras
    - The associations between I2 and barriers are also small; they get even worse those obtained for I1 in the majority of cases. Why equal to I1, this finding would seem to involve an implicit recognition of the need for innovation in the company despite the negative factors that they are to do so, but the diversity of signs in these relationships does not clearly in the results.
    - Thus, FFI, FFE, CE, DCE, RE, IFN and MNI obtained a negative sign for this relationship (Group) - front of the positive sign for the remaining (Group): FPC, FIT, FIM, MEE, POE, DPI, RI, FA_AAPP, IDF and AMI. Therefore the factors of the Group - decrease in intensity for enterprises which provide innovate while increasing the intensity of barrier of the factors of the group. This makes the factors of the group goal of greater attention by Government in its desire to foster business innovation.
    - These findings must be assumed with caution since only DPI and MNI are statistically significant. This circumstance, together with the fact that for the study perceptions offers more confidence made innovation than expected, they advise us to refer more to the results obtained by I1.

With regard to the applied process of neutralization, we obtain different outputs (Annex, Table 11). Thus, for I1 and barriers that were statistically significant for I1 commented as follows:

- Size. In micro-enterprises, in some cases, and in the small, statistical significance is given in others; aside from them, FPC and MNI also discriminate against gaining significance to small businesses and micro, respectively. The lower number of sample observations of medium and large enterprises (because of the representativeness of the sample) hinders or prevents the results for these two sizes. FPC and MNI, previously non-significant, passed to distinguish results by size.

[36] Quite possibly due to the lack of representativeness of the averages of both barriers, as we warned. This low quality of the media also gave to other obstacles -remember- of which FFI, FFE, RE and MEE now become associations statistically significant.

- Sector. We get significant difference by sectors for FFI, FFE, RE and MEE. But at the same time arise before not significant factors but yes they do with this control variable: DPI, RI and FDI.
- Industrial subsectors. This segmentation does not discriminate in these barriers, but in other previously non-significant results: RI, FA_AAPP, FDI, IFN and MNI.

Age. Of these factors, FFI, FFE, CE, FIT, RE and PISS they differ for segments of age. On the other hand, barriers arise earlier not significant that now happen to differences for ages: FPC, IFN, POE, RI, FA_AAPP and AMI.

For I2, the results demonstrate a better behavior of the segmentation for sizes that using the finished sample. We observe how the majority of the barriers turn out to be significant for the sizes microempresas/pequeñas; this joined the fact of which the symmetrical and directional measurements of the relations of the barrier with the significant segment increase with regard to the finished original relation, turns these affiliations in more powerful and extrapolables to the population that the respective original ones. This circumstance does not give itself in variable sector, from what we discard it, although yes slightly more in industrial subsections (between which the agroalimentario turns out to be reinforced). The variable age obtains turned out on line with the commented for the size, being improved therefore with regard to the finished relation without segmenting and allowing with it to establish a few affiliations of I2 with the barrier based on sections of ages.

In sum, the neutralization process makes it possible to obtain relations of innovation with best quality barriers by sizes (inclined to micro and small enterprises) and ages (variables for each barrier resulting segments), as well as sectors for I1 (features knowledge intensive services). The industrial sub-sectors discriminate relatively little with respect to the previous control variables (highlighting the food segment for I2).

II- Objective 2: behavior of subsidies or public aid to innovation

- Ítem B: *Do you know what subsidies or direct aid for the development of innovation?*

We see how about 85 companies manifest disregard the existence of subsidies or aid for innovation (Figure 4). Only the 11.3% companies known at least one type of grant or public aid to innovation, among which especially very FEDER (European Fund for Regional Development) -37.3%- and ICO (official credit Institute) -27.1%-, followed by the CDTI (Centre for Industrial technological development) -16.9%-.

This result is somewhat surprising after recalling power showing FA_AAPP as a detractor of the innovation in the first of our analysis and well situated place occupied by IFN. Regardless of the weakness of its discriminant analysis, the fact itself of this ignorance is worrying: would real responsibility responsibility lack of public support for innovation with innovative activities? The answer would require an analysis with other statistical methodology given the results achieved in this work. In any case, and if it is confirmed a specific causal relationship between misinformation and weakness in public funding, could identify as one of causing potential of this misinformation the poor relationship between the companies and the SECTI demonstrated by IIE (2010, 2011, 2012).

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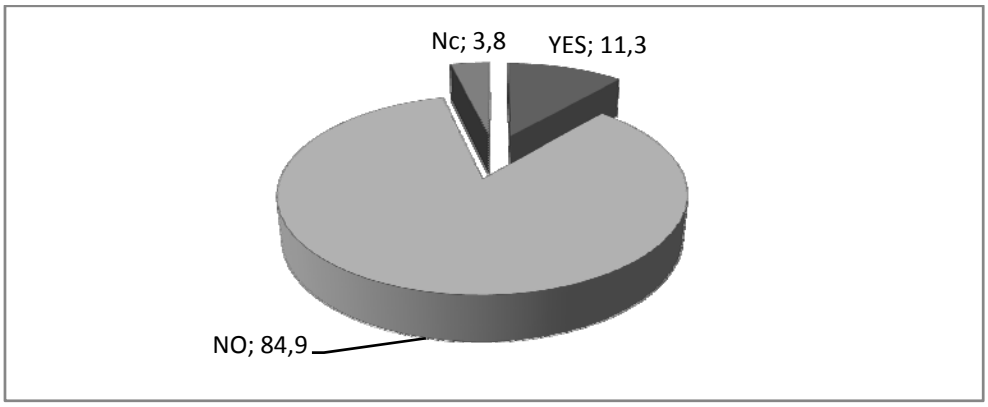
Figure 5: Frequency of responses (%) on the knowledge of the existence of subsidies or aid for innovation



Source: prepared by autor.

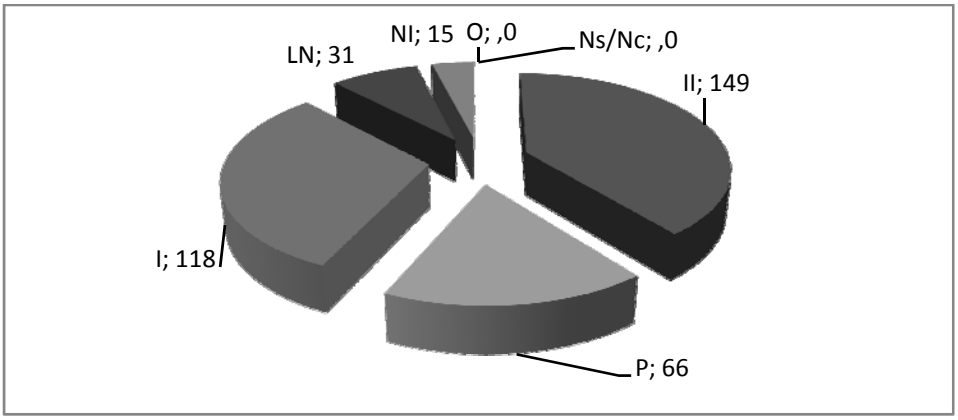
- Ítem C: *do Advantages considered that it brings to the company the possibility of direct aid (grants) and tax benefits in innovation activities?*

The answers are classified as follows:

II: Initiate innovation activities	LN: Include new lines of business in the company's strategy
P: Maintain or increase the budget devoted to innovation activities	NI: None
I: Undertake new projects in innovation or more risky projects	O: others

Described reality is exacerbated when it evidence (Figure 5) that the majority of the companies considered that subsidies and tax benefits drive innovation activity in enterprises in the sense easier start or continue to innovate (II and I).

Figure 6: Frequency of responses (nº firms) about the benefits that provide subsidies and tax benefits for innovation



Source: prepared by autor.

5. Final considerations

The barriers that hinder the Extremaduran companies innovative processes can justify much of the weak provision to innovate the Extremadura entrepreneurship. Hence the importance of knowing that most of the obstacles to innovate in the region detected in this study are economic and nature of cost - including financial constraints-. Follow him, distance, barriers related to the internal dimension of the company, linked to problems of lack of knowledge to deal with innovative

initiatives and market-induced brake. However, these negative factors vary according to the size of the company and his age, primarily, so should be considered segmented public policies of promotion of innovation.

We call attention to the need to investigate more deeply the impact on innovation of insufficient support from public administrations and the inflexibility of rules and regulations that regulate the innovative business activities. It found evidence of its powerful influence, fact which, along with the results of the barriers confirmed in this study, great disinformation manifesting suffering businesses of subsidies or aid existing public - though to recognize which facilitate them begin or continue to innovate-, I would advise public administrations in the region to rethink their policies to boost innovation in the terms collected here.

Annexes

Results of the contingency analysis

Table 6: Numer of firms for the FFI and FFE barriers

Contingency analysis	Valid		Lost		Total	
	N	%	N	%	N	%
I – FFI	425	90	47	10	472	100
I – FFE	410	100	0	0	410	100

Source: prepared by autor.

Notes: I – FFI (I – FFE): contingency analysis of innovation and FFI (FFE), including the respective neutralizations; N: number of firms; %: percentage proportion of valid (lost) of the total amount

Table 7: Statistics of the FFI barrier (including neutralization)

Control variable (neutralization)	NONE	SIZE				SECTOR		INDUSTRIAL SUBSECTOR			AGE				
		Micro	Small	Median	Big	Industrial	Services (*knowledge - intensive*)	Agri-food	Energy	Rest of industry	E1	E2	E3	E4	E5
Symmetrical measures	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**
Tau_c Kendall	-,155* [-,009]	-,188* [,017]	,001 [-,124]	-,438 [-]	- [-]	-,110* [-,010]	-,388* [-]	-,212* [-,032]	-,361 [-]	-,041 [-,002]	-,592* [,000]	-,134 [,090]	-,114 [,060]	-,177* [-,011]	-,318 [-,024]
Gamma (zero order)	-,192* [-,094]	-,239* [,202]	,001 [-,909]	-,538 [-]	- [-]	-,142* [-,094]	-538* [-]	-,251* [-,363]	-,448 [-]	-,057 [-,012]	-,784* [,000]	-,176 [1,000]	-,139 [,444]	-,177* [-,168]	-,318 [-,257]
Directional measurements	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**
Somers D (symmetrical)	-,118* [-,010]	-,145* [,019]	,001 [-,138]	-,350 [-]	- [-]	-,314* [-,011]	-,085* [-]	-,158* [-,036]	-,295 [-,002]	-,032 [-,010]	-,496* [,000]	-,108 [,109]	-,086 [-,027]	-,137* [,068]	-,247 [-,013]
Measures chi-cuadrado	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**
Pearson chi-cuadrado test	,092 [,955]	,043 [,820]	,991 [,086]	,397 [-]	- [-]	,463 [,954]	,185 [-]	,193 [,322]	,216 [-]	,960 [,989]	,067 [,264]	,612 [,988]	,252 [,841]	,140 [,849]	,514 [,584]
Likelihood ratio	,096 [,929]	,046 [,659]	,990 [,214]	,239 [-]	- [-]	,486 [,932]	,099 [-]	,127 [,525]	,088 [-]	,957 [,963]	,031 [,489]	,396 [,975]	,250 [,817]	,089 [,840]	,455 [,666]
Linear-by-linear association test	,002 [,511]	,001 [,295]	,917 [,003]	,242 [-]	- [-]	,047 [,447]	,010 [-]	,056 [,086]	,152 [-]	,425 [,920]	,062 [,960]	,325 [,440]	,125 [,312]	,029 [,405]	,261 [,466]

Source: prepared by autor.

Notes: NONE: analysis of the original relationship, i.e., no neutralizing. [ ]: results for dependent variable I2; *: significant for a level of confidence of 95%. Sig a.b.: estatistical significe (bilateral asymptotic). Tau-c Kendall, Gamma and Somers D: significance estimated by the asymptotic method.

Table 8: Statistics of the FFE barrier (including neutralization)

Control variable (neutralization)	NONE	SIZE				SECTOR		INDUSTRIAL SUBSECTOR			AGE				
		Micro	Small	Median	Big	Industrial	Services (knowledge-intensive)	Agro-food	Energy	Rest of industry	E1	E2	E3	E4	E5
Symmetrical measures	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**
Tau_c Kendall	-,125* [-,011]	-,122* [-,003]	-,080 [-,062]	-,438 [-]	- [-]	-,086 [-,014]	-,329* [-]	-,141 [-,032]	-,198 [-]	-,024 [-,011]	-,189 [-,024]	-,083 [,090]	-,117 [-,020]	-,211* [-,012]	,066 [,050]
Gamma (zero order)	-,161* [-,119]	-,161* [-,032]	-,100 [-,461]	-,538 [-]	- [-]	-,116 [-,123]	-472* [-]	-,166 [-,347]	-,333 [-]	-,036 [-,087]	-,286 [-,091]	-,111 [1,000]	-,146 [-,199]	-,284* [-,185]	,082 [,300]
Directional measurements	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**
Somers D (symmetrical)	-,098* [-,013]	-,096* [-,003]	-,062 [-,070]	-,350 [-]	- [-]	-,068 [-,016]	-,271* [-]	-,105 [-,036]	-,194 [-,013]	-,020 [-,010]	-,162 [-,025]	-,608 [,112]	-,090 [-,022]	-,172* [-,015]	,052 [,057]
Measures chi-cuadrado	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**	**Sig a.b.**
Pearson chi-cuadrado test	,148 [,640]	,144 [,529]	,749 [,001]	,443 [-]	- [-]	,392 [,614]	,158 [-]	,487 [,155]	,130 [-]	,197 [,407]	,288 [,428]	,308 [,990]	,210 [,150]	,033 [,851]	,131 [,063]
Likelihood ratio	,123 [,651]	,126 [,514]	,661 [,276]	,283 [-]	- [-]	,373 [,635]	,064 [-]	,398 [,586]	,061 [-]	,223 [,402]	,204 [,639]	,123 [,978]	,168 [,294]	,020 [,933]	,058 [,373]
Linear-by-linear association test	,003 [,694]	,004 [,561]	,578 [,056]	,181 [-]	- [-]	,041 [,631]	,024 [-]	,290 [,136]	,163 [-]	,241 [,774]	,137 [,814]	,650 [,491]	,055 [,676]	,011 [,290]	,809 [,535]

Source: prepared by autor.

Table 9: Synthesis of the statistics of the relations of I1 (I2) with the barriers

INNOVATION			BARRERA								
			FFI	FFE	CE	FPC	FIT	FIM	DCE	RE	MEE
I1	Association	Nature	Limited Negative	Limited Negative	Limited Negative	Limited Negative	Limited Negative	Limited Negative	Limited Negative	Limited Negative	Limited Negative
		Sig	Sig	Sig	Sig	No sig	No sig	Sig	Sig	Sig	Sig
I2		Nature	It worse vs I1 Negative	It worse vs I1 Negative	It worse vs I1 Negative	It worse vs I1 Positive	It worse vs I1 Negative	It worse vs I1 Negative	It worse vs I1 Positive	It worse vs I1 Negative	It worse vs I1 Positive
		Sig	No sig	No sig	No sig	No sig	No sig	No sig	No sig	No sig	No sig

INNOVATION			BARRERA							
			IFN	POE	DPI	RI	FA_AAPP	FDI	AMI	MNI
I1	Association	Nature	Limited Negative	Limited Negative	Limited Positive	Limited Positive	Limited Negative	Limited Positive	Limited Negative	Limited Negative
		Sig	No sig	No sig	No sig	No sig	No sig	No sig	No sig	No sig
I2		Nature	Level of I1 Negative	It worse vs I1 Positive	It improves few vs I1 Positive	It worse vs I1 Positive	It worse vs I1 Positive	It worse vs I1 Positive	It worse vs I1 Positive	It improves few vs I1 Negative
		Sig	No sig	No sig	Sig	No sig	No sig	No sig	No sig	Sig

Source: prepared by autor.
Sig: estadísticamente significativa

Table 11: Results of the neutralization

I1					I2				
BARRIER	SIZE	SECTOR	INDUSTRIAL SUBSECTOR	AGE	BARRIER	SIZE	SECTOR	INDUSTRIAL SUBSECTOR	AGE
FFI*	Micro*	Services (knowledge- intensive)*	-	E1*	FFI	Small*	-	-	-
FFE*	Micro*	Industrial* Services (knowledge- intensive)*	-	E4* E4*	FFE	Small*	-	-	-
CE*	Micro*	-	-	E3*	CE	Small*	-	Agro-food* Rest of industry*	E3* E4*
FPC	Small*		-	E2*	FPC	Micro*	-	-	E1*
FIT*	Small*	-	-	E2*	FIT	Small*	-	-	E5*
FIM*	-	-	-	-	FIM	Micro*	-	-	E1*
DCE	-	-	-	-	DCE	-	-	-	-
RE*	Micro*	Services (knowledge- intensive)*	-	E4*	RE	Small*	-	-	E4*
MEE*	Small*	Industrial* Services (knowledge- intensive)*	-	E3*	MEE	-	-	-	-
IFN	-	-	Energy*	E1*	IFN	Small*	-	Agro-food*	E4*
POE	-	-	-	E3*	POE	-	-	-	E1* E5*
DPI	-	Services (knowledge- intensive)*	-	-	DPI*	-	-	-	-
RI	-	Services (knowledge- intensive)*	Rest of industry*	E3* E5*	RI	-	-	-	-
FA_AAPP	-	-	Agro-food*	E3*	FA_AAPP	-	-	-	E1*
FDI	-	Industrial* Services (knowledge- intensive)*	Agro-food* Energy*	-	FDI	Small*	-	Agro-food*	E2*
AMI	Median*	-	-	E1	AMI	-	-	Agro-food*	E4* E5*
MNI	Micro*	-	Agro-food*	-	MNI*	Micro* Small*	Industrial*	Agro-food* Resto of industry*	-

Source: prepared by autor.
*: significant for a level of confidence of 95%. If it is a control variable categories, the rest of the control variable categories are not significant or, less often, can not be calculated. -: It does not discriminate by the control variable.

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HUMAN CAPITAL AND MARITIME ECONOMY: A PRELIMINARY APPROACH OF THE ALGARVE´S CASE

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HUMAN CAPITAL AND MARITIME ECONOMY: A PRELIMINARY APPROACH OF THE ALGARVE´S CASE

ABSTRACT: Portugal has one of the largest maritime Economic Exclusive Zones (EEZ) in the European Union. The potential and ambition towards maritime resources and the economy of the sea are well documented in several national policy documents. The Algarve is a region located in the south of Portugal with approximately 220km of coastline that has maintained over the years a social and economic relation with the sea and its resources. The maritime economy is a key strategic resource for the region but depends on the existence of the adequate human capital. Portugal, and specifically the Algarve, is characterized by limited percentages of population completing university education, a decrease of young people and an aging index that follows the European trends. Problems may arise related to job characteristics, skills and qualifications of the population, particularly in the maritime economy, which tends to combine skills involving advanced level of technological education with more traditional forms of knowledge. This paper aims to present the recent evolution of human capital in Portugal, exemplifying with the sample of companies listed on Euronext Lisbon characteristics, trends and implications to the connections of maritime economy and human capital.

Keywords: Algarve, Human Capital, Maritime Economy, Training and Learning, Types of Knowledge.

CAPITAL HUMANO E ECONOMIA MARÍTIMA: UMA ABORDAGEM PRELIMINAR DO CASO DO ALGARVE

RESUMO: Portugal tem uma das maiores Zonas Económicas Exclusivas (ZEE) marítimas da União Europeia. O potencial e a ambição relativamente aos recursos marítimos e à economia do mar, encontram-se presentes em vários documentos nacionais de políticas públicas. O Algarve é uma região localizada no sul de Portugal, com cerca de 220 km de linha costeira e que tem mantido ao longo da sua história uma relação social e económica com o mar e com os seus recursos. A economia do mar é um recurso estratégico basilar para a região mas depende da existência de capital humano adequado. Portugal, e especificamente, o Algarve, são caracterizados por uma percentagem limitada da população que completa o ensino universitário, uma diminuição da população jovem, e um índice de envelhecimento que acompanha as tendências Europeias. Este facto pode conduzir a um surgimento de problemas relacionados com as características do trabalho, das competências e das qualificações da população, particularmente no sector da economia do mar, que tende a requerer competências que comportem um nível avançado de educação tecnológica, mas também formas de conhecimento mais tradicional. Este artigo pretende apresentar a recente evolução do capital humano em Portugal, exemplificando com a amostra de empresas cotadas na Euronext Lisboa, as suas características, tendências e implicações para as ligações da economia marítima e do capital humano.

Palavras-chave: Algarve, Capital Humano, Economia do Mar, Formação e Aprendizagem, Tipos de Conhecimento.

1. Introduction

The need to outreach to new markets, financial transactions and business expansion fostered free competition in enterprises and diluted borders between countries providing a greater capacity to

create and adapt new knowledge to new environments as a process of deepening political, economic, cultural and social integration.

In this scenario, it is visible that the ownership of knowledge can be used by businesses as an asset which, if well managed, can become a business success. It is in this perspective that can be said that the business of the companies failed because quality of their knowledge (Mattlay, 2005), as it does not have sufficient capabilities and experience to process the available information, and may ultimately come to jeopardize the performance of the organization (Nonaka & Takeuchi, 1995).

This change of paradigm marks the evolution of an industrial society, characterized by companies that cover employees as manageable resources as all other resources (logistical, financial, technological resources, among others) with the objective of maximization of resources at the lowest possible cost, for a knowledge-based society, where companies conceive the employee as a strategic asset that has potential to be developed and which is liable to create, innovate and generate knowledge that forms the basis of differentiation of the company in the different segments of the market.

In this new era of knowledge, companies make a continuous effort to improve and generate new forms of information, skills and experience in an attempt to make an effective management of their intellectual capital, in order to succeed and thrive in the competitive environment. The management of the intellectual capital of a company is the mix of structural, relational and human capital and if exceed certain limits it is responsible for the success, creativity and innovation of the firm.

However, there are certain sectors of activity and certain regions that resemble some limitations in adapting to this new reality, to this social paradigm shift. The Algarve is a region with a fragile economic fabric, composed essentially for small and medium-sized enterprises, which due to their intrinsic characteristics and profile may present some restrictions on exploitation and on the utilization of adequate human capital. Specifically, the maritime economy may be an extension of this regional problem once it tends to combine skills involving advanced level of technological education with more traditional forms of knowledge. The aim of this article is to present the patterns that human capital suffered in Portugal in recent years. Firstly, the article reviews the literature on Intellectual Capital identifying the necessary interrelations among human capital, structural capital and relational capital (Mantilla, 2000). From the list of firms on the stock exchange of Lisbon, the study tries to understand current global situation and trends, making, in the end, the bridge with the implications that the maritime economy may present in Portugal and the Algarve to the utilization of intellectual capital as a strategic asset.

2. Intellectual capital

Contrary to previous conceptualizations of tangible characteristics of the industrial age in which entrepreneurs were directly associated to the property of physical resources, such as factories, equipment, money, among others, today intangible assets are central. These assets consist of non-monetary assets, without physical substance, identifiable, represented by resources and rights associated with an organization. Intangible assets whether they are accounted for or not, have value and can add the company competitive advantages. Intellectual capital (IC) is an intangible as intellectual assets do matter – knowledge, information, intellectual property and experience – and can be used in order to generate wealth (Ahmad & Mushraf, 2011; Stewart, 1998). Thus, it is possible to say that a firm committed to its intellectual capital gives greater emphasis to its intangible assets privileging non-financial capital which represents the hidden gap of book value (Edvinson & Malone, 1998), without forget accounting for their assets.

Because it is a current theme, intellectual capital has, however, some problems in terms of its conceptualization. A first problem lies in the lack of a consensual and universal definition of IC. As in many other concepts in human and social sciences, the diversity and multiplicity of definitions clearly shows that it is a developing concept that needs a greater deepening. One of the pioneers in finding

a definition was Stewart (1999) who conceives IC as the sum of all knowledge of company professionals capable of creating value and, consequently, wealth. On a slightly different perspective, Abad (2004) considers IC as all intangible elements that originate the valorisation of tangible assets and directly focus on the value added of the company, as well as on its efficiency and effectiveness. In a more global approach, IC can be defined as the knowledge asset that is owned and controlled by one company that leads to the creation of mechanisms of value in its stakeholders (Alipour, 2012). Despite the diversity and multiplicity of definitions for IC, researchers agreed on the fact that the creation and aggregation of value produced by the intellectual capital in enterprises brings benefits and advantages that leads to their differentiation.

Another problem that arises by looking IC as a result, most likely, from the diversity of definitions and different measurement methodologies, lies in its dimensionality. Regarding this aspect, different views about the sub-dimensions or components need to be integrated to construct a robust understanding about IC. Thus, some researchers (*e.g*. Chan, 2009; Clarke, Seng & Whiting, 2011; Galabova & Ahonen, 2011; Halim, 2010; Kamukama, among others) classify IC in the three following components: Human Capital, External Capital and Relational Capital. Other authors (*e.g.* Corcoles, Penalver & Ponce, 2011; Subramaniam & Youndt, 2005; Youndt, Subramanian & Snell, 2007, among others), extend this classification – Human Capital, External Capital and Relational Capital – subdividing the External Capital component in two sub-dimensions: Client Capital and Organizational Capital. Other authors (Beattie & Thomson, 2007; Cabrita & Vaz, 2006; Guthrie & Petty, 2000; Ordónez de Pablos, 2003, among others) are supporters of the following tripartite structure: Human Capital, External Capital and Internal (or Structural) Capital. Human capital corresponds to the education, skills, values, experience and continuous learning; external capital incorporates relations with customers and suppliers, the brand names of the products and the reputation of the company; and internal capital encompasses the organizational culture, concepts, patents, research and development models, computer and administrative systems (Sveiby, 1997). Mantilla (2000) considers also the IC as the set of systems and processes, constituted by Human Capital, Structural Capital and Relational Capital, production-oriented and knowledge-based participation, on behalf of the strategic objectives of the company. These three categories interact jointly in order to allow the company to turn their skills and knowledge in competitiveness and wealth (Li *et al*., 2006). The higher this interaction between the components that comprise IC greater will be the creation of value. The choice in this article falls on the last option of dimensionality presented.

3. The three components of intellectual capital

3.1 Human Capital

Whether focus on production, management, marketing, distribution or any other unit of the company, we know that these functions are always in the hands of workers and their intelligence. This shift of focus of the machinery for the physical and intellectual work force of employees, became a potential that if well harnessed can generate creativity and innovation, hence providing even greater relevance to human capital (Brás, 2003).

Human capital (HC) represents, therefore, all the knowledge and skills, aptitudes, attitudes and experiences accumulated by employees and their ability to generate creativity and new ideas (*e.g.* Joshi, Cahill & Sidhu, 2011; Léon & Navarro, 2003; Roos & Roos, 1997, among others). It is a business resource, designed as an asset, since it has the ability to generate future benefits for the company. It is not enough to have Human Capital within the firm, it should also be fostered in the company in the two following forms: the organization applies what people know, and there is a growing number of people who know useful things for the organization (Stewart, 1998).

Improving the quality of HC requires, on the part of the company, improve troubleshooting and the value creation of skills that result in a better individual performance and consequently a better organizational performance, improving the company's competitive advantage (Belly, 2002), being

decisive that the company makes investments in their employees and provide a continuous satisfaction and learning.

The management of Human Capital conceives their professionals as internal clients and uses fundamental concepts of marketing to define operational schemes which allow customizing the way the person is managed (Gratton, 2005). In this context, professionals/employees, among other functions, play of marketer's with a view to the creation of value, through the provision of a quality service that depends in not only the motivations, practices and techniques inherent to the marketer but mainly through the way the company meets their expectations. The basic premise is that the satisfied employee makes a satisfied customer. In this perspective, the employees are not only human resources but are considered people with its own personality, with different stories, knowledge, abilities and essential skills for the proper management of tangible resources. They are therefore people and not mere resources, such as financial resources, economic, accounting and logistics. As such, professionals in companies are considered smart activators, the booster's organization elements, able to grant intelligence, talent and learning, essential to its constant renewal and competitiveness in a world of change and challenge. People are a source of impetus, which streamline the organization and are not passive, inert and static agents. And so, the company can adapt to people to work and manage the knowledge through their skills.

The HC management also includes the management of competencies in order to make the work more challenging which can be achieved by the introduction of defiant functions. These missions aim to add new and demanding objectives to work, making it more diverse, stimulating and innovative. For example, to a high potential employee can be set as an objective to identify a new service. These missions may culminate in the identification of new business opportunities. Training greatly contributes to develop knowledge and skills. For Syarioto (2000) education and training constitute the long-term influence for the development of organizations, once the investment in education, training and entrepreneurial spirit is often the difference that causes companies to remain at the forefront of competition. To attract talented professionals, the training must be innovative through experiential methods and role-playing exercises in which the professionals are placed in concrete situations with specific problems to solve in a given time period. The networking meetings can also function as a good vehicle to search for meaning at work. In these meetings, professionals from various disciplines and departments of a company gather the purpose of sharing their skills and establish elements of convergence. On the one hand, people cannot be treated as mere factors of production, on the other hand, the company must increment the self-realization through coaching, which is a method that is focused on self-reflection and self-development and the objectives established by the customer. Through this technique, employees are encouraged to reflect on their professional needs and expectations.

Thus, in the future, it will be placed more energy in identifying the skills and capacities necessary for the proper performance of the functions of management. Therefore, companies in the future will give more space to diagnostic/assessment centres. They will have to pay more attention to the performance of roles based on job satisfaction and to give workers, progressively, a voice in the promotion process. The reward system will be more individualized. Managers will pay more attention to the sense of fairness of the employees; the managers will spend more time explaining their expectations about each of the employees; the degree of satisfaction of workers will increasingly take into account the relation to absenteeism. As regards the performance of the tasks, it is expected that the redrawing functions is increasingly a way for the intensification the quality of life at work and not only the production. Regarding leadership, managers will tend to play a role of influence by adopting creative methods for solving complex problems. The role of groups in organizations will also increase. Managers will gain more sensitivity to the benefits of teamwork to increase productivity. The role of managers will be more active in setting standards of functioning of work teams. Deviant behaviours will tend to be seen more as innovation and less as dysfunction and something to eliminate. Managers will evolve into the role of administration internal consultants and of line managers. They will have the role of ensuring the intellectual capital of the organization, of

being facilitators of change processes and the ones responsible for motivation programs and monitoring all organizational strategies. In short, knowledge management will increasingly be in the future a competitive advantage for companies in general. Successful organizations are those that present themselves more able to attract, develop and train people indispensable and critical to their business. Therefore, the major challenge of the companies of the future will be in its ability to attract, capture and retain talented individuals. The HC is what produces the company's structural capital, since it is necessary to form certain structures, as information systems and processes for the implementation of the activities.

3.2 Structural Capital

Structural Capital (EC) is the capital of the company's knowledge that remains even if people get fired and out of the organization (Bontis, 1998; Lopéz & Criado, 2002). Thus, the EC integrates intangible assets related to the structure and processes of internal and external functioning, such as technologies, innovation, data, publications, strategy, systems, culture, routines and procedures (Riahi-Belkaoui, 2003). In the global, the EC is the patrimony of the company that comprises all intangible assets that shape the structure of the company and the culture that promotes knowledge and integrates the various company functions with a view to improving effectiveness of the company through their coordination (Delgado-Verde, Castro & Navas-Lopes, 2011).

As IC, EC also presents problems of dimensionality. For example, Edvinsson and Malone subdivide the EC on three components: Organizational Capital, Innovation Capital and Processes Capital. Corroles, Penalver e Ponce (2011) subdivide the EC on Organizational Capital and Technological Capital. In turn, Phusavat, Sitko-Lutek, Comepa and Ooi (2011) subdivide the EC on Organizational Capital and Customers Capital, among many other prospects who conceive the EC concept composed of sub-classes.

Structural Capital management aims to ensure that the knowledge used in business operations is the ideal and that accompanies the progress and change. One of the ways that companies have to keep work processes with quality is by obtaining Quality Management Certification ISO 9001:208. This system provides a set of standardized requirements, establishes standards of quality in work processes, the objectives to meet regarding customer satisfaction and quality and continuous improvement of performance (International Standards for Business, Government and Society, 2011). Another strategic measure of the management of the EC is to review periodically the knowledge created in the company in order to keep up with changes in the business environment and maintain its authenticity. Another major concern of the management should be not to forget the technological capacity of the company in terms of storage devices and knowledge of databases that replace other obsolete devices allowing making technological advances. All these, and other, measures which may be adopted by the company allowing the generation of wealth, create barriers to employees to take with only the tacit knowledge upon leaving the company and keep in the company the skills that are part of the culture of the organization.

3.3 Relational Capital

The Relational Capital (RC) is defined as the ability of the organization to create relational value with external elements that are part of the interested company, commonly called stakeholders (Halim, 2010; Joshi, Cahill & Sidhu, 2011; León & Navarro, 2003), and centred in knowledge and in interactions with various external parties: alliances, clients, investors, distributors of networks, partners and suppliers.

The RC also presents problems of dimensionality. For example, Pomeda and colleagues (2003), extending the scope of the RC by adding another sub-dimension called Social Capital to cover external relations to society as a whole. Other authors (Edvinsson & Malone, 1997; Kamath, 2007; Cheng, Lin, Hsiao Lin &, 2008; Seleim & Hhalil, 2011) focus only on clients doing a very capital-centric approach of customers with a large focus on the reputation of the brand, reputation, customer base. Other academics (Delgado-Verde, Castro & Navas-Lee, 2011) refer to the assets resulting from a successful relationship with actors of the company environment whether they are customers,

suppliers or allies. The general idea is that the strength of the value created by the company is due to the quality of the relationships established with their stakeholders.

Relational Capital Management should allow the company to learn how to get involved in relationships with external entities, whether they are customers, suppliers or other stakeholders, in order to build real relationships, because only this way they can be a source of knowledge. The business develops as the various stakeholders interact with each other. On the one hand, solid relations with customers and suppliers promote the sharing of a knowledge environment that acts as a means of discussion on their products quality-price, but also news and new products, distribution channels and technology that could benefit all stakeholders. On the other hand, a sound management of clients through a good customer service or guarantees offered can increase customer loyalty to brand and their recommendation to other potential customers. A good company-client relationship will be established if both sides feel rewarded, some for purchasing and others by selling. In addition, the extension of contacts to other equally important external parts, such as State institutions that provide business support, can offer opportunities for access to foreign knowledge that on other way it is very difficult to access. All these strategies adopted by the company to generate knowledge are a window of opportunity that opens for discussion, negotiation and cooperation with all interested parties outside the company as a way to create value for the company.

In short, the great challenge of enterprises in the era of knowledge is to explore the art of managing intellectual capital through their capture, retention and constant renewal. This art requires a coordination and orchestration on the part of each component – Human Capital, Structural Capital and Relational Capital – and coordinating work ranging from management levels up to operational, so that in this structured endeavour the company can not only survive but also thrive.

4. Intellectual capital in Portuguese firms

4.1 International and national research

This section analyses the evolution of the disclosure standards that Human Capital has suffered in recent years in Portugal. To verify the experience of companies to disclose their experiences in terms of Intellectual Capital, empirical research has been conducted recently in several different countries. Examples can be found for Denmark and Australia (Engström; Westnes & Westnes, 2003), United States, Canada, Germany, United Kingdom, Japan and South Korea (Abeysekera & Guthrie, 2004), Australia (Guthrie & Petty, 2000), Ireland (Brennan, 2001), Sri Lanka (Abeysekera & Guthrie, 2004), South Africa (April, Bosma & Dedlon, 2003), Italy (Bozzolan, Favotto & Ricceri, 2003), Brazil and United States (KAYO, 2002), Asia, Europe and the Middle East (Pablos, 2002), Spain (Pablos, 2003), Malaysia (Bontis, Keow & Richardson, 2000) and Taiwan (Tsan & Chang, 2005) referenced by (Vargas, Selig, Andrade & Ribeiro, 2008, p. 619-620).

In Portugal, the discussion of IC is not recent. There are also several studies attempting to identify patterns of IC dissemination (Gomes, Serra & Ferreira, 2006), explanatory factors (Oliveira *et al.*, 2006), assess the relevance of the intangible nature information (Oliveira *et al.*, 2006) and even compare the evolution obtained by explanatory factors for prior studies (Rodrigues & Oliveira, 2001; Ferreira, Serra & Gomes, 2007).

In the latter study (Fisher et al., 2007) the organizational attributes that showed higher rates of disclosure were the "management philosophy", the description of the "management process" and the "financial relations". In fact, about 95% of the companies analysed disclosed this information in its management report. However, assigning a numeric and monetary quantification is almost negligible, with the exception of the description of financial relations where 56% of companies presented quantification. This situation is due to the largely theoretical arguments of organizational characteristics analysed, and the financial relations, for its monetary nature, are easily assigned quantification (p. 100).

Studies used mainly samples of companies admitted to Euronext Lisbon, whose data can be obtained on the analysis of the reports and accounts of companies listed on the Lisbon Stock Exchange.

4.2 Methodology

In this article, the analysis of the intangible reporting of Portuguese firms regarding the HC was made from companies, whose shares were listed on Euronext Lisbon in the year of 2012, making 41 companies (Table 1). To have consistency and coherence in the presentation of results, were used the same analysis criteria, following the methodology already adopted by Gutrie and colleagues (1999) and Brennan (2001). This process was followed by the same sequence numbers in data collection:

- Zero (0) if the attribute is not disclosed;
- One (1) if the attribute is disclosed in a merely descriptive way;
- One (1) if the description is accompanied by a numerical quantification;
- One (1) if the description is accompanied by a monetary quantification.

The attributes of the HC analysed were similar to previous Portuguese research (Rao & Oliveira, 2001; Gomes *et al*., 2007), summing seven attributes analysed:

1) education,
2) professional qualification,
3) work-related knowledge,
4) work-related skills,
5) entrepreneurial spirit/initiative/motivation/dedication,
6) training/continuous learning, and,
7) safety, hygiene and occupational medicine.

The methodology of interpretation of the data was defined based on the literature review, more specifically in the study prepared by Rodrigues and Oliveira (2001) and Ferrreira et al. (2007) that refers to the analysis of the report of the intangibles of Portuguese companies, through the analysis of the reports and accounts of companies listed on Lisbon Stock Exchange, in 2012 (Table 1).

Table 1 - Sample of companies admitted to Euronext Lisbon in 2012, which was the subject of the present study.

1.Altri SGPS	22.Isa
2.Banco BPI, SA	23.Jerónimo Martins – SGPS, SA
3.Banco Comercial Português, SA	24.Lisgráfica
4.Banco Espírito Santo, SA	25.Martifer
5.Banco Santander Central Hispano, SA	26.Media Capital
6.Banif – SGPS, SA	27.Mota-Engil, SGPS, SA
7.Benfica	28.Novabase – SGPS, SA
8.Cofina – SGPS, SA	29.Portucel, SA
9.Cimpor – Cimentos de Portugal, SA	30.Portugal Telecom SGPS, SA
10.Corticeira Amorim –SGPS, SA	31.Reditus – SGPS, SA
11.EDP – Electricidade de Portugal, SA Banif –	32.Ren
12.Estoril Sol –SGPS, SA	33.SAG Gest - SGPS, SA
13.F. Ramada	34.Salvador Caetano, SA
14.Futebol Clube do Porto	35.Semapa - SGPS, SA
15.Galp Energia – NOM	36.Sociedade Comercial Orey Antunes, SA
16.Glintt	37.Sumolis – Comp. Ind. De Frutas e bebidas, SA
17.Grupo Soares da Costa, SGPS, SA	38.Sonae Com SGPS, SA
18.Ibersol – SGPS, SA	39.Teixeira Duarte – Engenharia e Construções SA
19.Imobiliária Construtora Grão Para, SA	40.VAA – Vista Alegre Atlantis, SGPS, SA
20.Impresa – SGPS, SA	41.Zon Optimus
21.Inapa – Investimentos, Participações e Gestão, SA	

Source: Own Elaboration

The interpretation of results is intended to highlight the degree of disclosure for each component of HC, taking into account the numerical sequence presented in data collection (Zero (0) if the attribute

is not disclosed; One (1) if the attribute is disclosed in a merely descriptive way; One (1) if the description is accompanied by a numerical quantification; One (1) if the description is accompanied by a monetary quantification), in relation to the selected attributes (education, professional qualification, work-related knowledge, work-related skills, entrepreneurial spirit/initiative/motivation/dedication, training/continuous learning, and, safety, hygiene and occupational medicine). The results which we present on the index of dissemination of human capital by companies listed on the Lisbon stock exchange in 2012, may be compared with those obtained previously by two similar studies (Rodrigues & Oliveira, 2001 e Ferreira et al., 2007).

4.3 Results

Table 2 presents a comparison of the number of companies that were the subject of the three studies – the study done in 1999 by Rodrigues and Oliveira (2001), the study conducted in 2003 by Ferreira and colleagues (2007) and the present study regarding companies listed on the Lisbon stock exchange in 2012.

The interpretation of results is intended to highlight the degree of disclosure of the HC in respect of seven attributes assessed under the HC: education, professional qualification, work-related knowledge, work-related skills, entrepreneurial spirit/initiative/motivation/dedication, training/continuous learning, and, safety, hygiene and occupational medicine.

Table 2 - Sample of this study compared to the other two studies, in relation to the standards of disclosure of Human Capital.

Studies	Rodrigues and Oliveira (2001)	Ferreira et al. (2007)	This Study (2012)
Number of companies analysed	72	48	41

Source: Own Elaboration

The results obtained in the companies analysed in 2012 shows that 66% do not describe any attributes, 18% describe the attributes, and 14.6% describe the attributes with numeric value and only 1.4% with monetary value. As can be seen, most companies analysed have not yet created a habit of disclosing the HC, only one-third (34%) did so in 2012 and 16% materialized through monetary or numeric values. Figure 1 presents the seven studied attributes in relation to analysis criteria of disclosure described before.

The results obtained allow us to highlight the attributes of Human Capital more and less disseminated in 2012, as well as compare with the two studies carried out previously, in 2001 and 2007, respectively. So:

The attributes most disseminated in 2012, with regard to the dissemination of HC are, firstly, the "training/continuous learning"; secondly, the "entrepreneurial spirit/initiative/motivation/ dedication" and "work-related Skills"; and in the third the "professional skills and" work-related knowledge" in ex aequo.

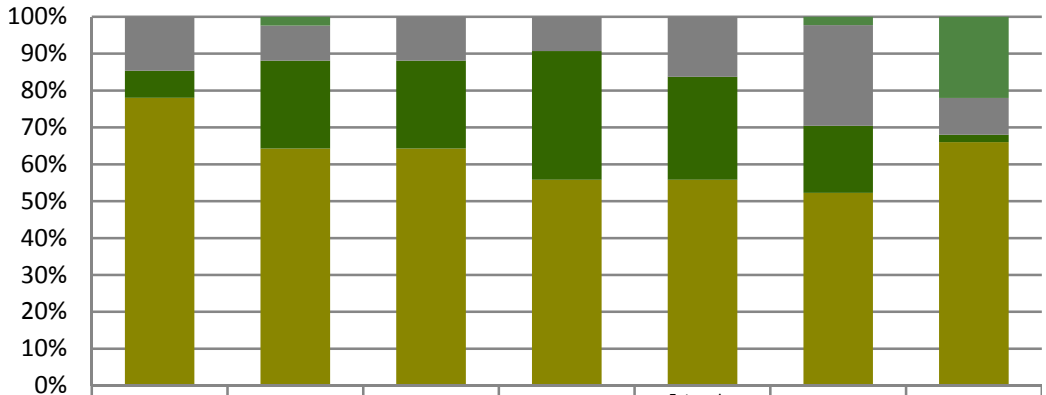
Regarding the first attribute more publicized, the "training/continuous learning", we realized that it is essentially described with numeric values. This fact evidences analysed companies already have a steep learning curve at the level of training that allows them to not only refer to their practice, but also to quantify it in numerical terms, although still note a lack of monetary level specification. The "training/continuous learning" is also the most publicized attribute in previous studies (Rodrigues & Oliveira, 2001; Ferreira, Serra & Gomes, 2007).

The second most-publicized attribute is the "entrepreneurial spirit/initiative/ motivation/dedication" and "work-related skills" (in *ex aequo*), essentially described by a numerical value, by number of employees and of actions taken in this context. There is, in the present study, an evolution in relation to previous studies (Rathee, 2001; Ferreira, Serra & Gomes, 2007), which only highlights the "motivation" on set "entrepreneurial spirit/initiative/ motivation/dedication". Similar to the current

study, previous studies also positioned the motivation in second place in the ranking, although without any numeric or monetary quantification. As for the "work-related skills," soars from third place (Ferreira, Serra & Gomes, 2007) for the second in the present study, placing a greater emphasis on dissemination of skills on the part of these companies. The results presented by the three studies show that this attribute is particularly disclosed by the banking sector in order to specify what are the competences developed by collaborators.

The third attribute is the most publicized "professional qualifications" and "work-related knowledge" (*ex aequo*), which are presented primarily as described and numerical. This result coincides with that of Rodrigues and Oliveira (2001), which did not have the same emphasis on the study of Ferreira *et al* (2007), which showed that the number of companies that made mention of his qualifications was reduced. In relation to the "work-related knowledge" the study of Ferreira et al. (2007) also shows that this is the least described although, in some situations, he did notice a description in monetary terms.

Figure 1: Human Capital Attributes



	Education	Professional qualification	Knowledge related with the job	Competencies related with the job	Enterprise spirit/Initiative/Motivation/Dedication	Training/Long-life learning	Health and safety
Describe with monetary value	0	1	0	0	0	1	11
Describe with numerical value	6	4	5	4	7	12	5
Describe	3	10	10	15	12	8	1
Do not describe	32	27	27	24	24	23	33

Source: Own Elaboration

The attributes less disseminated in 2012 as regards the dissemination of the HC were "education" and "safety, hygiene and occupational medicine".

The fourth attribute was the "education", which is described essentially with numeric value. The attribute "Education" which had been highlighted in the study by Rodrigues & Oliveira (2001), has not been as prominent in the study of Ferreira, Serra & Gomes (2007), being only a few companies that mention the academic degrees of their employees as well as its quantification, having been registered in two previous studies, a monetary description of education.

The fifth attribute was the "safety, hygiene and occupational medicine". Essentially described numerically, it was no surprise because large companies are obliged to submit annually these numeric values in the Social balance sheet. The results were similar to those found in the study of Rodrigues & Oliveira (2001), in which, "Safety, hygiene and medicine at work" was considered one of the least mentioned attributes and contrast clearly with the study of Ferreira e colleagues (2007) that featured in 3rd place. It is concluded that, although from 2001 to 2007 have been a positive development in the dissemination of the attribute "Safety, hygiene and medicine at work", conquered by ascent places on the podium, currently the descent in the rankings shows that it is no longer so relevant, to give place to the competencies.

In general, we can see that the strategic goals of disseminating the HC shifted from 2007 to 2012. In 2007 we had as the disclosure vector "Training, motivation (associated with rewards) and “Safety, hygiene and occupational medicine”. In 2012 the "training, entrepreneurial spirit/initiative/motivation/dedication", and the "Knowledge, skills and professional qualification related to the work" have been given a higher incidence. This new trend highlights the growing concern of today's companies in focus on aspects related to the extra-paper of its professionals and with your organizational commitment expressed via the link and identification with the projects and objectives of the company, revealed by publicizing the HC through the entrepreneurial spirit, initiative and dedication demonstrated.

On the other hand, the dissemination of 2012 of the HC, give greater relevance to the knowledge and skills of professionals evaluated companies This concern is greater the higher the size of the company and the more targeted they are for international markets.

This clear trend for the dissemination of Training, Involvement, and Knowledge competence of professionals, comes, most probably, to meet the needs faced by these companies to cope with the political, economic, cultural and social integration conducive to its internationalization and justify their framing in the era of knowledge.

5. Policy implications

This article reviewed the conceptualization of intellectual capital, underlining that it is composed by three forms of capital: human, structural and relational. Companies are taking these multiplicities with more attention. Our brief case study of Euronext listed companies underlines the focus given to these dimensions as strategic features.

As it is possible to see there are no companies directly related to the maritime sector in the list, so it is not possible to measure the disclosure and the disseminated attributes related to the maritime economy. However, the sea continues to be a strategic resource for the development of the Portuguese economy, and of the Algarve region.

The attributes examined by this study are the same whatever the sector of activity of the company. The results obtained by the companies studied in relation to HC are an important signal of the need of the companies today have to adapt faster in order not only to survive and adapt policy, economic, cultural and socially, but also to thrive in an era of knowledge. In this context, this study is an important contribution to understanding the relevance of human capital that can be transposed to the maritime sector, which continues to be a strategic resource for the development of the Portuguese economy in general and the region of the Algarve in particular.

The economy of the sea presents complex problems of technological basis in most of its vectors of development, which require the involvement of a highly qualified workforce. The recognition, maintenance and enhancement of professional qualifications, for current and future generations, is fundamental to maintaining and securing specialized frames across the range of sea-related activities. At present, are not ensured the necessary conditions for the education and training of the workforce, particularly those that allow the qualification of an increasing number of technicians in sea-related disciplines.

The strengthening of national research, development and innovation in the field of science and maritime technology achieved in the last decade was significant and covered almost the entire range of specialties involved in the exploration and preservation of national maritime space potential. At regional level, *the operational programme Algarve 21,* has reinforced the need to invest strategically in the Algarve Sea supporting projects and initiatives. In addition to this program, and according to the Regional Development and Coordination Commission of the Algarve, in December 2008, has developed a Regional Agenda of the sea in an attempt to optimise the use of resources linked to the sea, to ensure their protection, operational connection with scientific research and innovation. The main priorities of this agenda were betting on an efficient network of port infrastructures, support to

fishing, aquaculture and other sea-related economic, fleet support and sustainability of resources, exploitation of sea products, training, research and innovation. The increased activity and involvement of human resources in various fields, will match, necessarily, the greater demand for that the activities function in a safety environment. This installed capacity human capital is expected to come out strengthened by policy, rationalization and qualification of intellectual capital in public administration and with the promotion of increased inter-sectorial cooperation. This aggregation of capabilities and competencies will be crucial to achieve the critical mass required to excellence in knowledge, the exploration and preservation of the ocean and securing the necessary conditions for structural capital. Concerning the traditional knowledge, it is fundamental to place maritime traditions and enhance the utilization of this kind of knowledge, once there is an accentuated ageing of the human capital, for example the fishermen and an absence of incentives for the recruitment of young people for this activity, that puts in risk not only the fisheries sector and the absence of fish, but also the reduction of human capital, and other traditional activities in this sector. In this sense, it is necessary to recreate a modern maritime identity, which does not deny the traditional values, but that is forward-looking and empower a new spirit guided discoveries for the creativity in the conception, preparation and pro-entrepreneurship activity in action, realizing the opportunities that the sea offers to Portugal.

As said in the beginning, Portugal has one of the largest EEZ of the European Union. This immense maritime dimension brings together major challenges but also opportunities without precedent for Portugal. The country should therefore take the initiative, leading European and international processes relating to maritime governance and exploration, aiming at fostering the economy, and enhance and preserve that which is the national most relevant resource. The region of the Algarve is well positioned to enhance its maritime economy. The regional maritime cluster is being stimulated by the enhanced coordination and collective efforts with the creation of a cluster agency – *Plataforma do Mar do Algarve* – that intends exactly to foster the relational capital among the relevant stakeholders. In parallel, the definition of the RIS3 – Research and Innovation Strategy for Smart Specialization in the Algarve for 2014-2020 underlines the potential of the sea as a central economic domain that can be the catalyst of the necessary related variety among economic activities. It is therefore crucial to develop the sea sector in a more integrated with a more concerted participation of all stakeholders, prioritizing training-action to ensure the articulation between the modernization process of companies and universities. And, put on regional, European and global agenda that Portugal is the face of Europe and the Atlantic European connection to deep seas.

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Session 3 - Empirical studies focusing the conditions for resilient territories

TOURISM AND ALGARVE´S UNDERWATER ARCHAEOLOGICAL HERITAGE VALORISATION: A CASE STUDY

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ABSTRACT: This paper aims to investigate the interrelation between sea, tourism and culture associated with underwater archaeological heritage. Its main objective is to determine the existence of creative actions and projects that valorise tourism related with underwater archaeological heritage in the Algarve. The assumption is that underwater heritage is a valuable resource to tourism economy of seaside territories. Regarding the Algarve, WTTC (2003) refers that "the Travel & Tourism industry directly contributes 45% of GDP and 37% of jobs". However, as is also refereed in this document "forecasts for the next ten years (2013) are very modest". This means that, unless Algarve Tourism (Algarve Tourism Entity) (Turismo do Algarve) and the private sector succeed in changing direction and surpassing the baseline forecasts, the share of visitor exports in the scheme of total exports will fall. As MEID/TP (2011) and Governo de Portugal (2013) point out for the Algarve region, the Sun and Sea, as well as Golf, are considered to be the main strategic products. The core Sun and Sea product should have a multi-segmented offer and be able to widen the summer season. In this context, it is important to develop new tourism products related with sea, nautical and cultural tourism. The present paper is based on a documental research of tourism public policies and also on a set of interviews of entities connected with underwater archaeological heritage with the intention of determining their role in the valorisation of this type of heritage in the Algarve.

Keywords: tourism, sea, underwater archaeological heritage, Algarve.

1. Introduction

The present article aims to reflect on the interrelationship between culture, tourism and sea, associated with underwater archaeological heritage. This kind of material heritage (culture) is understood in the context of its tourist-cultural valorisation (tourism) in underwater environments (sea). The assumption is that the relationship between culture, tourism and sea can contribute to the tourism product development either as a complement to the "sun and sea" and nautical tourism or by fostering cultural tourism demand.

Simultaneously, this paper considers the growing recognition, by a significant number of public and private entities, of underwater archaeological heritage (UAH) as part of the cultural heritage and as an element of peoples' history, as pointed out by UNESCO (2001) and ICOMOS (1999).

In this context, a case study is presented circumscribed to the Algarve's region – quintessential tourist region of southern Portugal – which the main objective is to assess the importance of the underwater archaeological heritage touristic valorisation, by public and private (schools / centres diving) entities, as well as actions and current and future projects associated with this heritage. In this sense, the valorisation of the underwater archaeological heritage is framed in the perspective of a political intervention and joint efforts between public / private entities for this resource tourism development.

Thus, in addition to bibliographical and documental research associated with this type of heritage conceptualization, an analysis is made of the main tourism policy and planning instruments in the region followed by a reflection on the results of a survey directed to a set of public and private entities linked respectively to the sectors of culture, tourism and the sea, in the Algarve and Portugal.

In the survey, along with the identification of the elements of underwater archaeological heritage with greater tourist potential in the Algarve, determining strengths, weaknesses, opportunities and threats in UAH tourism valorisation is also required. The main current and future projects in this domain are also asked.

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Finally, a set of conclusions on the tourism development of the underwater archaeological heritage in the Algarve is presented.

2. Tourism and underwater cultural heritage: a relationship approach

2.1. Underwater Cultural Heritage: conceptualization

With the twentieth century, new uses are associated with heritage, as evidenced in the Athens Charter (ICMS, 1931) and in the Venice Charter (ICOMOS, 1964).

Regarding underwater cultural heritage, the UNESCO' Recommendation on International Principles Applicable to Archaeological Excavations (1956) and the Commission for Culture and Education (Council of Europe) (1970) establish international principles governing the protection and excavation of archaeological sites.

However, it is only in the 90s, that the UAH begins to attract more attention, particularly since the adoption of the Convention on the Protection of the Underwater Cultural Heritage and the recognition of UNESCO as a responsible entity.

The 1990 ICOMOS Charter for the Protection and Management of Archaeological Heritage defines the "archaeological heritage" as "that part of the material heritage of which archaeological methods provide primary information, comprising all vestiges of human existence and consisting of places relating to all manifestations of human activity, abandoned structures, and remains of all types, together with all the portable cultural material associated with them. For the purposes of this Charter, underwater cultural heritage is understood to mean the archaeological heritage that is in, or has been removed from, an underwater environment. It includes submerged sites and structures, wreck-sites and wreckage and their archaeological and natural context (in ICOMOS, 1996).

The 1996 Charter on the Protection and Management of Underwater Cultural Heritage (as a supplement of 1990 Charter) "is intended to encourage the protection and management of underwater cultural heritage in inland and inshore waters, in shallow seas and in the deep oceans" (ICOMOS, 1996).

As Article 1 points out "the preservation of underwater cultural heritage *in situ* should be considered as a first option". Simultaneously, it states that a set of actions should be implemented, namely: "public access should be encouraged", "non-destructive techniques, non-intrusive survey and sampling should be encouraged in preference to excavation", "investigation must not adversely impact the underwater cultural heritage more than is necessary for the mitigatory or research objectives of the project", "investigation must avoid unnecessary disturbance of human remains or venerated sites" and "investigation must be accompanied by adequate documentation" (ICOMOS, 1996).

The 1996 Charter also highlights the relationship between underwater cultural heritage and tourism: "archaeology is a public activity; everybody is entitled to draw upon the past in informing their own lives, and every effort to curtail knowledge of the past is an infringement of personal autonomy" (ICOMOS, 1996). Underwater cultural heritage contributes to the formation of identity and can be important to people's sense of community. If managed sensitively, underwater cultural heritage can play a positive role in the promotion of recreation and tourism".

The UNESCO Convention on the Protection of the Underwater Cultural Heritage, adopted in 2001, intends to enable States to better protect this heritage. "Acknowledging the importance of underwater cultural heritage as an integral part of the cultural heritage of humanity and a particularly important element in the history of people, nations, and their relationships with each other concerning their common heritage, intends to enable States to better protect this heritage" (UNESCO, 2001). For the purposes of this Convention, article 1 states: "Underwater cultural heritage" means all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years such as:

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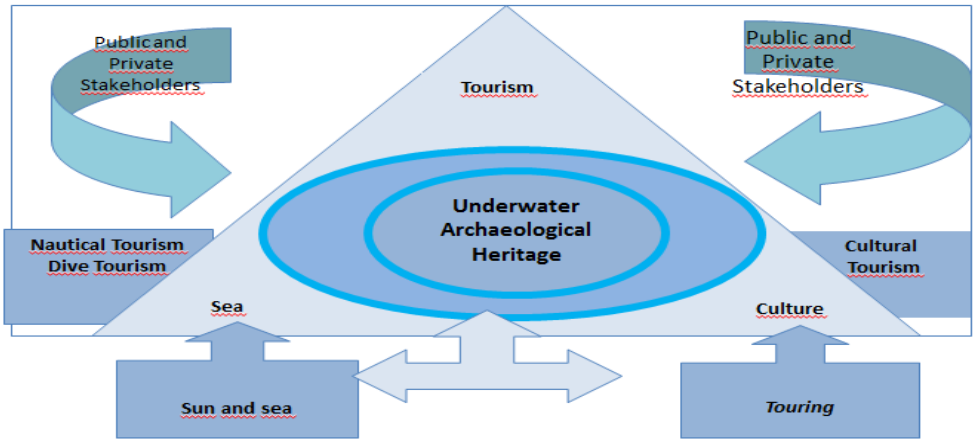
(i) sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context; (ii) vessels, aircraft, other vehicles or any part thereof, their cargo or other contents, together with their archaeological and natural context; and (iii) objects of prehistoric character" (UNESCO, 2001).

Regarding objectives and general principles (article 2), this "Convention aims to ensure and strengthen the protection of underwater cultural heritage". It also states that Parties shall preserve and cooperate in the protection of underwater cultural heritage. Simultaneously, among others actions that shall be implemented, it features: "the preservation in situ of underwater cultural heritage shall be considered as the first option before allowing or engaging in any activities directed at this heritage"; "recovered underwater cultural heritage shall be deposited, conserved and managed in a manner that ensures its long-term preservation" and "responsible non-intrusive access to observe or document in situ underwater cultural heritage shall be encouraged to create public awareness, appreciation, and protection of the heritage except where such access is incompatible with its protection and management".

In this context, the framework associated with underwater cultural tourism takes us to a conceptual interrelation based on three major research dimensions (Figure 1). The first one is related with the underwater cultural (archaeological) heritage, the second refers to tourism, namely cultural tourism/heritage tourism and the third one is associated with the sea, in particular sun and sea, nautical and tourism.

Figure 1 - Tourism, Culture and Sea framework



Source: Own elaboration

Cultural tourism is related with visits motivated (in whole or in part) by interests in the history, arts, science (*stricto sensu*), but also with the way of life of a community, region, group or institution (*lato sensu*) (Group 106, 2013). Regarding heritage tourism, it values a community history and past artefacts. As Cuvelier et al. (1994) point out; heritage is a set of tangible and intangible elements that safeguard the identity of its holder and its adaptation over time in a changing world. Consequently, heritage contextualization within an environmental preservation area and resources *heritagization* is crucial (Talavera, 2003; Gellner, 1993) in order to strengthen culture (Roberts, 1996; Costa, 2009).

Concerning underwater cultural heritage, it is also seen as a "reinforcing factor of a sense of cultural identity and collective memory" associated with the reconstruction and development of a narrative (Claudino/CNU, 2012: 64).

The importance of culture in tourism destination attractiveness and competitiveness is a crucial aspect that should be considered in a region of sustainable development (OECD, 2009; ETC, 2005). Additionally, OECD (2013), regarding cultural and creative resources associated with tourism, states that "cultural and creative resources are key drivers of attractiveness". The perspective is that it is important to build "a strategy that capitalises on cultural and creative resources" that "can provide competitive advantages. The challenge is to identify a consolidated measure" (OECD, 2013).

Considering underwater cultural heritage human interventions', Claudino/CNU (2012) shares examples such as "Madrague de Giens", "Skuldelev I", "Elisabeth and Mary", "Bodrum", "Vasa", "Labrador". The purpose is to foster an increase in knowledge about the culture and human behaviours of the past.

As stated in Claudino/ CNU (2012: 19), there are several types of archaeological sites, such as "pre-historic flooded sites (...), marshes or lakes where offerings were deposited and buried the dead, flooded port cities". However, what tends to capture the majority of underwater archaeologists is "the study of the construction and use of all types of boats and ships". We should have in mind that a large part of the past has been connected to the water, in particular oceans. "Civilizations linked in crossing oceans. Continents were settled by seafarers. Battles were fought on the sea or for the rule of the sea. And, in even older times, a decisive part of the development of human life took place on lands that are now submerged by water" (Guérin, in Cláudino/CNU, 2012: ii).

As for scuba diving, it can be associated with numerous options, such as "sports, wreck diving, underwater photography, archaeological diving" (Aleixo, 2010: 68). And also: "this type of action can attract all kinds of amateur and professional divers as a strong bet with regard to nautical tourism of sun and sea tourism". As for archaeological diving, it holds "an enriching significance from the standpoint of cultural enjoyment, in relation to important underwater cultural heritage (…)" (Aleixo, 2010: 70).

When UAH and tourism are interconnected there are some attributes and activities that should be considered, as suggested in a Spanish Ministry of Culture guide named "Rota do Património Arqueológico Marítimo de Espanha e Portugal". They are the following: 1) Institutions involved in the research, management, conservation and protection of the UAH, 2) Museums (containing important or relevant sets related to Maritime and Underwater Cultural Heritage), 3) Heritage artefacts linked to maritime and underwater archaeology (e.g. cities and port structures, shipwrecks, ports, anchorages, sunken cities, submerged structures, etc.), 4) Areas of Maritime and Archaeological Heritage (ARQUA, 2008).

2.2. Tourim and underwater archeaological heritage safeguard strategies in Portugal

2.2.1. Institucional framework

In 1958, the Portuguese Centre for Underwater Activities (Centro Português de Atividades Subaquáticas - CPAS), in collaboration with the National Museum of Archaeology and Ethnology (Museu Nacional de Arqueologia e Etnologia), undertook a set of missions related with underwater archaeological heritage.

In Portugal, the Decree-Law No. 416/70, of 1 September, by the Portuguese Navy is the first public entity reference to underwater archaeological heritage. The Decree-Law No. 577776, 21 July, also contributes to structuring the legal framework.

In 1975, the constitution of a Defence of Underwater Archaeological Heritage Working Group allowed the achievement of a multiplicity of activities in the field of underwater archaeology.

However, it is only in the 80s that we can attend the foundation of the National Commission for Underwater Archaeology (Comissão Nacional Provisória de Arqueologia Subaquática - Secretaria de Estado da Cultura). It constitutes a step forward in the defence policy of underwater cultural heritage.

The year 1985 reveals a change of attitude regarding the Portuguese heritage (Arqueonautica – Centro de Estudos, 1992). The Decree-Law 13/85 defines the basis of cultural heritage and clearly states its fundamental principles. It stands out: "Article 1: Portuguese cultural heritage integrates all tangible and intangible artefacts that by their own recognized value must be regarded as relevant interest through time" (Diário da República, Decreto-Lei nº 13/85, de 6 de Julho).

In this Decree-Law, the concern with heritage valorisation through its characterization as not only a material benefit, but also as an immaterial benefit related with identity values, is expressed.

Furthermore, it establishes the duty of all citizens to preserve and enhance heritage. The assumption is that it is a common heritage and its safeguard is not only a government responsibility but also a citizen's responsibility. As for UAH, numerous and successive discoveries in the field of underwater archaeology in Portugal, especially in recent decades, led to the recognition of its importance and expressiveness (Alves, 2002).

For instance, in the 1980s a campaign of excavations, promoted by Museu Nacional de Arqueologia (MNA) and with the support of the Instituto Português do Património Cultural (IPPC) at the wreck site of the Spanish Galleon San Pedro de Alcantara (1988, Peniche), as well as the first archaeological prospection using the geophysical detection systems both onshore) and in underwater environments (1986-1989), contributed to the development of UAH state of art.

However, as Alves (1986, in Aleixo, 2010: 65) points out, the underwater archaeology sector showed evidence of occasional initiatives launched officially.

In Portugal, the harmonization of legislation concerning archaeology in underwater environment activities led to the empowerment of the Portuguese Institute of Archaeology (Instituto Português de Arqueologia - IPA) as the responsible for the management of archaeological activity within the national territory (Decree - Law No. 164/97, 27 June), embodied in the creation of a service called the National Centre for Nautical and Underwater Archaeology (Centro Nacional de Arqueologia Nautica e Subaquática - CNANS). This Decree eliminated the licensing of the commercial exploitation of underwater cultural heritage and archaeological activity held in all underwater environments. The Decree considers the underwater cultural heritage as " (...) consisting of all movable and immovable property and surrounding areas, evidence of a human presence, possessed of historical, artistic or scientific value, situated wholly or partly in underwater environments, soggy or wet (...) (Diário da República, Decreto-Lei nº 164/97 de 27 de Junho). (Decree - Law No. 164/97 of 27 June) .

In the twenty-first century, there are some important highlights that should be pointed out in the underwater archaeological domain, namely the Ria de Aveiro Project (2005), Navio Arade I (Ship Arade I) (2005), archaeological prospection works of construction of the piers at Oeiras Harbour , initiatives such as "Project IPSIIS", "Diving with a purpose", "Adopt a shipwreck", "ANSER Project".

In 2007, the Decree - Law No. 376/2007, of 30 March, approved the statutes of the Institute of Management of Heritage Architectural and Archaeological (Instituto de Gestão do Património Arquitetónico e Arqueológico IP) whose Safeguard Department, incorporates now the Division of Archaeology Nautical and Underwater (Divisão de Arqueologia Náutica e Subaquática (DANS). Paragraph 1, article 2, states as DANS powers: "(...) the promotion, protection and enhancement of maritime and underwater archaeological sites (...), the promotion and support of the Archaeological Charter of National Cultural, Nautical and Underwater Heritage (Carta Arqueológica do Património Cultural Náutico e Subaquático Nacional), within the Archaeological Charter of Portugal (Carta Arqueológica de Portugal) (...), the supervision and monitorization of archaeological work within the nautical and underwater archaeological heritage" (Decree - Law No. 376/2007; in IGESPAR, 2012).

The future forecasts of tourism development associated with UAH are positive, when considering the growing number of PADI worldwide membership (from 81,321 individual members in 1996 to 135,710 individual members in 2012; and from 4,036 retail & resort membership to 6,161 in 2012), with a growth percentage of 66.9% and 53.4%, respectively in individual members and retail & resort membership (between 1996 and 2012) (PADI, 2013). Concerning worldwide certification, in 2012, the cummulative number of certifications was 21,258,914, of which 34,0% are female and 66,0% male, with a medium age of 29 years old (PADI, 2013).

According to estimates of the Associação Portuguesa para a Dinamização do Mergulho (APDM) in Portugal there are approximately 40,000 certified divers, and 6,000 engaged in the activity on a regular basis. Considering the commercial and business activity of diving there are about 80 schools and diving centres in Portugal (Aleixo, 2010: 69). A brief analysis of their websites shows that the most frequent services are education and training of diving activity and, appearing as a secondary source, funding equipment sales and rental of equipment.

2.2.2. Tourism and safeguard strategies

The Strategic Commission for the Oceans (Comissão Estratégica dos Oceanos, 2003) tells us that the development of tourism is directly linked to culture and environment sectors. This statement leads to the emphasis on sustainable touristic development policies, in a context of safeguarding natural resources in such a manner that contributes simultaneously to cultural heritage valorisation. This Report Commission (CEO, 2003) states that, tourism; nautical recreation and boating and maritime tourism activities, develop a genuine connection between the tourism industry and the ocean. This connection enhances a new tourism product, complementary to "Sun and Sea", called "Ocean Tourism".

The European Commission (EU, 2006) published a Green Paper entitled, "Towards a future Maritime Policy for the Union: A European vision for the oceans and seas". In its Strategic Objectives for 2005-2009, the European Commission identified "the particular need for an all-embracing maritime policy aimed at developing a thriving maritime economy and the full potential of sea-based activity in an environmentally sustainable manner". Among the main themes highlighted in the Green Paper, the "attempts to address a wide range of issues and deliver multiple benefits including the cultural aspects of a shared European maritime environment" is emphasized. However, it points out that: "we are mindful that an effort to conserve archaeological interests beyond the Territorial Seas of member states must be in compliance with The United Nations Convention on the Law of the Sea 1982. In this regard, the recommendation that Member States are to be encouraged to sign the UNESCO Convention for the Protection of the Underwater Cultural Heritage 2001 will require far more attention and further negotiation" (EU, 2006).

Regarding UAH, the Green Paper seeks to highlight the interconnections and interdependence of different domains such as sea and tourism, which could enhance UAH touristic valorisation. "It points out, for example, how the development of port infrastructure has to be weighed against the protection of local ecosystems, the promotion of coastal aquaculture and tourism development, as well as the benefits of economic growth through foreign trade. It shows how fishing vessels, container ships, pleasure boats, oil companies and wind farms, for example, have to jostle for position in our increasingly crowded waters" (EU, 2006a).

According to the Task Group for Maritime Affairs (Estrutura de Missão para os Assuntos do Mar 2006), the National Strategy for the Sea (Estratégia Nacional para o Mar) shows the crucial importance in promoting national objectives towards the sea valorisation and the development of activities related to the sea. With regard to the actions and measures to be undertaken, chapter V in subparagraph h) suggests: "Tourism, leisure, sports and recreational nautical, valuing the sea as a factor of tourism supply differentiation" (…); promotion of oceanic and nautical tourism by international sports events and prestigious maritime tourism activities such as sailing, rowing, canoeing, recreational boating, diving and bird watching and cetaceans; boosting tourism associated with fishing activity, taking advantage of important natural areas classified on our coast (...)".

In the preamble of strategic actions, with emphases on awareness raising and mobilization of society, with regard to activities that develop sea-related (Ministério da Defesa Nacional, 2006): "i. To adopt the ocean as a differentiating factor in the country, ii. To promote the continuing media coverage of maritime activities along the Portuguese society, iii. To promote environmental education, iv. To promote sports related to the sea; v. To promote the preservation and enhancement of historic underwater cultural heritage, archaeological and encouraging the study of sociocultural aspects of sea-related activities, as well as the preservation in museums of art relevant historical evidence, archaeological and cultural vi. To promote achievement in Portugal's international prestigious events related to sea and ocean themes, vii. To promote actions under the CPLP related to the sea that foster cooperation, contributing to the International Oceans Agenda".

Under current National Ocean Strategy 2013-2020 (Estratégia Nacional para o Mar 2013-2020 (Governo de Portugal, 2013) "sun and sea" and "nautical" tourism development is considered important. The document also reinforces the idea of the creation of underwater archaeological sites

that may potentiate the development of a tourism sector of added value to the local scale, as well as activities related to the observation of cetaceans and other marine life also of particular importance. The implementation of the National Ocean Strategy requires collaboration with other strategies, policies and national programs, such as the National Strategy for Sustainable Development, the National Program of Policy Planning and the National Strategic Plan for Tourism, among others.

The implementation of a National Strategy to the Sea (Estratégia Nacional para o Mar) requires an interconnection with others political documents as a National Strategy for Sustainable Development (Quadro de Referência Estratégica Nacional - QREN) and the National Strategic Plan for Tourism (PENT 2006-2015).

3. Methodology

In accordance with the objectives outlined, the study was based on a questionnaire applied between December 2012 and January 2013 to 15 public and 23 private entities; a total of 38 entities. From the 38, 23 answers were obtained.

The public entities were selected according to a criterion, namely their intervention capacity in culture, tourism and sea sectors, in a national, regional and local context. With this aim, the entities that were referred in the document entitled "Projeto MUSUBMAR – Museu Subaquático da Marinha Portuguesa" (2011) were considered for the sample. The public entities considered were: Instituto do Turismo de Portugal, Entidade Regional de Turismo do Algarve Turismo, Instituto de Gestão do Património Arquitetónico e Arqueológico (IGESPAR), Direção Regional de Cultura do Algarve (DRCA), Câmara Municipal de Portimão (Vereadora da Cultura), Museu de Portimão (Núcleo de Arqueologia), Associação para a Promoção e Desenvolvimento do Turismo Subaquático (MUSUBMAR), Comissão de Coordenação e Desenvolvimento Regional do Algarve (CCDR), Estrutura de Missão para Assuntos do Mar (ENAM), Instituto da Água e do Mar (INAG), Estado-Maior da Armada (EMA - Comissão Cultural da Marinha), Instituto da Conservação da Natureza e da Biodiversidade (ICNB), Instituto de Investigação das Pescas e do Mar (IPIMAR), IPTM – Instituto Portuário e dos Transportes Marítimos (IPTM). The total of respondants was 7.

The private entities are Schools or Diving Centers included in the Portuguese Classification of Economic Activities (CAE) / INE (2007), which are associated to the Recreation and Leisure Services, Other sport activities, Organization of animation activities and other amusement and recreational activities. The Schools or Diving Centers selected were: Algarve Divexperience (Praia do Carvoeiro), Blue Ocean Divers (Lagos), Centro de Mergulho da Universidade do Faro, Deep Blue (Faro), Delphinus Divers (Armação de Pera), Divers Cove – Escola de Mergulho (Lagoa), Diverscape (Sagres), Dive Spot (Armação de Pera), Dive Time International (Lagos), Easy Divers (Albufeira), Exclusive Divers (Alvor), Hidroespaço (Faro), Indigo Divers (Albufeira), Isla Subvrsa (Vila Real de Santo António), Mar Ilimitado (Sagres), Open Waters Dive (Quarteira), Pinguim Sub Lda (Portimão), Portisub (Portimão), Subnauta (Portimão), Scuba Tour (Armação de Pera), Sudeste Scuba Diving (Sagres), Torpedo Diving (Quarteira), Udiving (Faro).

After completion of the questionnaire application process, data were imputed and analyzed with the help of SPSS (Statistical Package for Social Sciences, Version 20.0 for Windows) program.

Data associated with closed questions were analysed with the help of descriptive statistics. The open questions analysis was based on a content analysis ("categorical analysis") (Bardin, 1977). "This aims to take into account the totality of a text by passing it through the sieve of the classification and the census, according to the frequency of presence (or absence) of items of sense. (…). It is the method of the categories, species of drawers or significant items that allow the classification of the elements of constitutive significance, of the message "(Bardin, 1977).

4. Case study: underwater archeaological heritage and its touristic valorization

4.1. Algarve's underwater archaeological heritage: brief characterization

The Algarve region is located in the south of Portugal, with a surface near 5,000 km ², which corresponds to 5% of the national territory (CCDR-Algarve, 2006). The region has almost 200 kilometres of coastline with long sandy beaches, where the waters of the Atlantic Ocean meet the Mediterranean, resulting in water temperatures ranging between 14-22 degrees Celsius, 300 days per year (ABAE 2012). Forecasts for the next ten years (2013) are very modest.

According to WTTC (2003), the Travel & Tourism Industry and the Travel and Tourism Economy have an important weight in terms of GDP and employment, respectively 45% and 37% in 2003 with growing forecast to 2013. These data are due to the fact that the tourism industry, associated primarily with the "Sun and Sea" product, has revealed to be the heart of economic growth in the region. According to IMPACTUR (2013), in 2012, the Algarve has 14 million overnights, 3 million guests and income of EUR 593 455 789.

Over the years, the sea has been a common denominator of Algarve's identity (Ministério da Defesa Nacional, 2007), highlighting the underwater resources of the region and their significant scientific interest and cultural tourism potential (CCDR - Algarve 2008), which tend to be associated with diving activity growth. This activity can also be understood as a "dive in history" or as a possibility to observe *in situ* UAH (Alves and Rieth, 2005).

An article published in the "Jornal do Algarve" (2009) entitled "Treasures submerged waiting to be rescued", mentioned that data from DANS show that Algarve seas have about 400 records of submerged vessels.

Following Ministério da Cultura de Espanha (2008), "Faro A", and "Museu de Portimão" integrate the UAH route – *Ruta del Património Arqueológico Maritimo de Espanã y Portugal*. Much of Algarve´s underwater wealth is recorded in Algarve´s database of shipwrecks (PORTISUB, 2012), which is constituted by iconic dive sites integrated in three main zones: 1) Zone 1: is not associated with underwater archaeological heritage, but with flora and marine species wealth (includes "Jardim do Ivo", "Bota de Fora 2" and "Castelo") (PORTISUB 2012).

2) Zone 2: is fundamentally associated with "Spyros" shipwreck located at about 10 feet, which consequently tends to suffer more from the force of the waves. However, although this wreck is quite destroyed, it is possible to see a large part of the hull, the bow and the stern rudder (PORTISUB, 2012).

3) Zone 3: is associated with a relevant set of shipwrecks including the "Castillo Moncada", "Kaolack", "Torvore" , "Nordsoen "Wilhelm Krag" and "L' Ocean" (PORTISUB 2012).

Regarding "L'Ocean" (in Salema beach), in July 2005, a team from CNANS set up an itinerary that allows a guided visit to the site in the sequence of a pioneer experience promoted since 1993 (Subnauta 2012). In the shipwreak "in situ", which is between 6 and 9 meters deep, the largest iron ship currently in reserve can be seen (measured about 5.5 m and weighs about 3 tonnes), as well as cannons, a large hoist and many other pieces (Subnauta 2012).

The ARADE archaeological complex and the OCEAN REVIVAL, both near Portimão, are considered attractive from a tourism point of view (Ocean Revival, 2012). Complex artificial reefs Ocean Revival includes: Ocean Patrol Zambezi (292 tons, 44 meters long and 8 of mouth); Corvette Oliveira e Carmo (1430 tons, 85 meters long and 12 mouth); Hydrographic Ship Almeida Carvalho (1320 tons, 64 meters long and 12 mouth); Frigate Commander Hermenegildo Capelo (2,700 tons, 102 meters long and 12 mouth).

4.2. Tourism Planning Framework

The QREN (2007-2013) recognises the tourism, recreation and leisure cluster as strategic for Portugal and its regions (MEID, 2006). In the Algarve Operational Programme (PO Algarve, 2006), the

Integrated Programs (as anchors of regional development), stand out on the environmental improvement of the Arade Area and Vincentina Coast. They suggests a set of actions, among which highlights the navigability of the Arade river, and the improvement of nautical tourism, cruise tourism, heritage and cultural tourism, among others (CCDR, 2006). All these actions tend to value UAH.

In terms of tourism planning, PENT (2006-2015), in the revision of 2013, states that all the ten tourist products previously defined are still valid. Regarding the Algarve region, sun and sea, golf and residential tourism are considered consolidated products. Health tourism, nature tourism, nautical tourism and business tourism are products in development. All the other products were considered as complementary or expressionless (Governo de Portugal, 2013).

Concerning nautical tourism, it is referenced by PENT as one of the innovative products with a high development tendency in the Algarve region. Nautical tourism registered an annual growth of 0.5% over the last 5 years, estimating future growth of 3% to 4% per year (Governo de Portugal, 2013). It is associated with sports, such as scuba diving, which is related with underwater archaeological heritage.

In order to benefit of the sea opportunities, the guidelines of the regional strategy for the sea – "Algarve sea", propose: "to ensure the maintenance and enjoyment for the present and future generations of their marine heritage (natural and cultural-) associated with social development and the sea economy through coastal zone and Algarve sea management in a sustainable, equitable, holistic and integrated way (...)" (CCDR - Algarve 2008).

In this strategy there's a concern to promote and develop the maritime and cultural heritage in an Action Plan (Algarve Regional Sea Agenda, CCDR-Algarve 2008) for the cluster Algarve sea based on a Maritime Cultural Heritage SWOT matrix. The strengths pointed out are the diversity of relevant historical archaeological heritage resources; the existence of underwater archaeological itineraries; valorisation initiatives regarding archaeological and industrial heritage linked to maritime activities. The main weaknesses were the lack of strategy for the enjoyment of cultural heritage associated with the sea and economic activities, the lack of full integration of archaeological heritage in the region's touring, and also the lack of means and funds for a more active intervention.

The SWOT matrix opportunities highlight the growing demand for tourism products with higher added value and creating skilled employment associated with the environment, the sea, culture and heritage. As threats the insufficient appreciation of the cultural heritage for economic activities, the potential conflict between port construction and preservation of archaeological findings and the lack of coordination between levels of government for the preservation and enhancement of classified sites, are noted.

Also, under the Regional Algarve Plan - PROT Algarve (CCDR-Algarve, 2007) and in the context of a profound articulation between the definition of regional priorities of the territorial scope, it is noted a concern with safeguarding and valuing the historical and archaeological heritage (CCDR-Algarve, 2007).

5. Results

The questionnaire /survey applied to public and private entities related to culture, tourism and sea sectors highlighted the importance attributed to the Algarve, respectively as a "tourism", "cultural tourism" and "underwater archaeological heritage tourism" destination. The majority of respondents considered the Algarve (87%) a "very important" tourism destination. In terms of cultural tourism, the "important" category (34.8%) gains prominence, whereas only 13% responded with "very important."

Regarding the importance of tourism associated with "underwater archaeological heritage", respondents point out a relative weight of "very important" (22%), which is more significant than

that attributed to “cultural tourism”. UAH is also seen as "very important" (21%) or "important" (38%).

For the major icons of UAH in the Algarve, respondents advance in the first and second choice option, respectively, the sites wrecks of "L'Ocean" (34.8%) and "Willhelm Krag" (21.7%). "Shipwrecks", "Gunboat Faro", "submerged Quarteira", "B24 Bomber," "Torvore" and "Spyros" are also mentioned, as well as "Algarve’s University surveys", and the "Algarve museums” (table 1).

Table 1 - Algarve’s UAH icons

Ranking	Icons of Algarve’s UAH	Nº	%
1º	L’Ocean (34,8%), Shipwrecks (17,4%), Armação de Pera (natural reef) (8,7%), Submerged Quarteira (4,3%), Faro A (4,3%), Algarve Museums (4,3%)	18	78.3
2º	Wilhelm Krag (21,7%), Arade (13%), underwater wrecks (8,7%), underwater fauna and flora (8,7%), Submerged Quarteira (4,3%), shipwrecks (4,3%)	17	73.9
3º	Gunboat Faro (Canhoeira Faro) (17,4%), underwater caves (8,7%), Wilhelm Krag (8,7%), shipwrecks (4,3%), Nordsoen (4,3%), Submerged Quarteira (4,3%)	13	56.5
4º	Faro A (21,7%), B24 Bomber (4,3%), Torvore (4,3%)	10	43,5

Source: Own elaboration based on the questionnaire

Respondents were also asked about strengths, weaknesses, opportunities and threats of Algarve as a tourist UAH destination in order to trace the SWOT matrix. As for strengths, the "significant number" of these heritage resources and "good access" (both 23.5 %) were distinguished interconnected with "excellent sea conditions" (17.6 %) (Table 2). It should be noted that "good accessibility" (23.5 %) along with the "supply of schools / dive centres" (8.8%) are considered elements of tourism supply upgrade. This easy access is related with free maritime traffic, which is reflected in the respondents’ opinion regarding the weaknesses such as "undefined protection and conservation of the places" (17.6 %), in the "absence of laws and regulations access" (11.8%) and " lack of recovery projects" (11.8%) applicable to underwater archaeological heritage, among others (table 2).

Table 2 - SWOT Analysis and Underwater Archaeological Heritage Tourism valorization – Strengths and Weaknesses

Category	Subcategory	%	Category	Subcategory	%
Strengths	UAH in a significant number	23,5	**Weaknesses**	Undefined protection and conservation of places	
	Good Access			Absence of laws and regulations access	
	High number of schools/diving centres			Lack of recovery projects	
	Divulgation (in Algarvian museums)			Lack of an official divulgation	
	Archaeological campaigns			Poor UAH visibility *in situ*	
	UAH recognized importance as an economic value			Lack of itineraries	
	Documentation			Lack of technical means	
	Good itineraries			Lack of knowledge regarding UAH	

Source: Own elaboration based on the questionnaire

Regarding the opportunities, the strategic measures that should be harnessed to render the Algarve as a competitive UAH destination stand out. The "growth of nautical tourism potential" (31%) followed by the opportunity to explore a "innovator market and conquer new audiences" (24.1%).

With regard to threats, there is the fear of "looting" (15.8%), followed by "lack of access laws and regulations" (13.1%). In order to achieve sustainability, it is necessary to implement innovative management models to counter other threats such as the "Mediterranean competition" (13.1%), the "bureaucracy" (10.5%) as well as the "absence of communication between public and private entities (7.8%) (Table 3).

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Table 3 - SWOT Analysis and Underwater Archaeological Heritage Tourism valorization – Opportunities and Threats

Category	Subcategory	%	Category	Subcategory	%
Opportunities	Potential growth of Nautical tourism	31	**Threats**	Looting	15,8
	Innovating market and conquering new audiences	24,1		Lack of access laws and regulations	13,1
	Creation of a cultural tourism market	10,3		Mediterranean competition	10,5
	UAH safeguard	10,3		Bureaucracy	7,8
	Excellent weather and physical conditions	6,9		Absence of communication between public and private entities	5,2
	Good accessibilities	6,9		Destruction of UAH unknown or without inventories	5,2
	Regional awareness UAH importance	6,9		Lack of financing	5,2
	Appreciation of UAH in the context of discovery	3,4		Lack of UAH preservation and safeguard	2,6
	Others (without expression)			Others (without expression)	

Source: Own elaboration

Concerning the entities identified by their involvement and role in the recovery of underwater archaeological heritage in the Algarve, in descending order of importance, respondents have marked as first option, DGPC (30.4 %) , followed by ERTA (21.7 %) , Schools / Dive centres (13 %) , IP (8.7%) , Algarve University-UALG (8.7%) and Municipalities (4.3%).

Regarding the question about the indication of both projects and actions in the field of tourism development of underwater archaeological heritage in the Algarve, the majority of respondents chose as their first option the actions regarding "L' Ocean" (21.7 %) followed by "publication of guides and itineraries" (13 %), the "campaigns in the Arade river" (8.7%) and " Faro A" (4.3%) (table 4) .

Table 4 - Most relevant actions and projects in the field of Underwater Archaeological Heritage in the Algarve

Ranking	**Actions and projects**	**Nº**	**%**
1º	L'Ocean (21%), publication of guides and itineraries (13%); the Arade campaigns (8.7%); Faro A (4.3%); archaeological prospecting (4.3%); Documentation (4.3%; legislation (4.3%); Promotion (4.3%); Disclosure (4.3%)	16	69,6
2º	Promotion (13%); Faro A (8,7%); L'Ocean (4,3%); Portimão Museum (4,3%); UAH development projects (4,3%); Legislation (4,3%); divulgation (4,3%)	10	43,5
3º	Legislation (4,3%); safeguard UAH projects (4,3%); Algarve University surveys in UAH field (4,3%); divulgation (4,3%)	4	17,4

Source: Own source

When requested to report UAH current and future actions and projects related with tourism development as well as respectively its classification level of achievement, articulation, degree of innovation, degree of tourist attraction and level of economic impact, the response rate was not very high.

Regarding the current actions and projects in the Algarve, the most referenced subjects were the "UAH excavations and prospection and underwater environment studies" (18.8%). The wreck site of "L' Ocean" and its importance within tourism development in underwater environments (12.5%) was also mentioned (12.5%). "Archaeological campaigns in "Faro A" and "disclosure/divulgation of UAH in Algarve' museums" were also pointed out (both with 12.5%).

Actions and future projects were associated with "maps of location" creation (37.5 % and 40 %) and "documentation and safeguard research projects" (25%). Actions in the field of "development of nautical tourism product" (12.5 %) were also referred.

6. Conclusion

The underwater archaeological heritage has been recognized internationally and in Portugal, by multiple entities, for its intrinsic value but also for its association with the tourism sector.

In the National Tourism Strategic Plan (PENT and its revisions), regarding the Algarve, the valorisation of products such as "sun and sea", "nautical tourism" and "touring" allows the possibility to also enhance the UAH. However, the lack of an effective policy of valorisation and dissemination of this important touristic/cultural/sportiv activity is still evident, but has not yet managed to affirm itself as a heterogeneous and distinguished product in the nautical tourism sector, thus remaining undefined in the industry without any kind of visibility. This fact is due solely to the lack of tourism marketing of the Algarve as the destination for the practice of leisure and cultural diving.

Also, regarding territorial planning and regional planning, PROTAL states the need to plan the coastline. Regarding the Regional Agenda of the Algarve Sea (CCDR-Algarve, 2008), there are contributions to an action Plan to the Algarve Sea Cluster. In the SWOT matrix of maritime cultural heritage, strengths such as “the diversity of relevant archaeological-historical resources" as well as the reference to the existence of "underwater archaeological itineraries" and "valorisation initiatives of archaeological or industrial structures linked to maritime activities" are referred.

In the survey carried out at public and private entities related to culture, tourism and sea sectors, the recognition of tourism, cultural tourism importance, namely associated with icons of UAH’s value in the region, were explicit. This is consistent with the growing recognition of organizations, such as UNESCO (2010), among others, of the importance of culture as a factor of economic and territorial competitiveness.

At the same time, a significant number of underwater heritage assets, as well as the possibility of access through the schools / diving centres contribute to UAH’s touristic development. On the other hand, this heritage tourist potential has not yet been integrated in an effective regional planning and management, since there remains, according to the respondents, " undefined protection and conservation of sites “, " absence of laws and regulations for access " and " absence of recovery projects applicable to underwater archaeological heritage.

In this context, the weak reference to actions and projects can be understood. The highlights go namely to the L' Ocean and the publication of guides and itineraries. As for activities and projects in which respondents participated, the references went to "UAH excavations and prospections” and “underwater environmental surveys". Regarding the future, the emphasis should be on the 'location maps elaboration”.

Thus, it is expected that Algarve develops strategic measures/actions that transforms UAH to a competitive tourism product. The growth potential of nautical tourism followed by the opportunity to explore innovative marketing and attract new audiences are opportunities that must be achieved.

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NAUTICAL SPORTS EVENTS PORTFOLIO AS A DRIVER TO INNOVATIVE DYNAMICS

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NAUTICAL SPORTS EVENTS PORTFOLIO AS A DRIVER TO INNOVATIVE DYNAMICS

PORTFÓLIO DE EVENTOS DESPORTIVOS NÁUTICOS COMO MOTOR DE DINÂMICAS INOVADORAS

ABSTRACT: Sports events have been used as a strategy to attract tourists, taking an increasing role in the strategic plans of cities, regions and countries. In this paper we aim to explain how the leverage of a nautical sports event portfolio (Kite Masters Portimão World Tour, Formula Windsurfing World Championship, Sailing Audi Medcup, Power Boats World Championship, Portimão Global Ocean Race, F1H2O World Championship) hosted in a tourist community of Algarve contributed to new dynamics around the sea. In this research we adopted a qualitative-interpretative perspective, and an evolutionary case study method. The data led us to the conclusion that the reinforcement of the destination's image was the main goal. Furthermore, through the study of the leveraging process, it was possible to identify a strategic goal of the studied events which was not in the leverage theoretical models, namely "to innovate sports tourism products". The events were also constituted as a platform for connectivity and diversity, creating a space and a time for local communicative interaction, facilitating the evolution of the dynamics in the Municipality of Portimão, in logic of transformative causality.

Keywords: innovation, sports tourism, leveraging, nautical sports events, strategic management.

1. Introduction

Tourism is the greatest industry worldwide, producing ever growing benefits. On the other hand, sport became the most generalized cultural phenomenon of this century. Therefore, sport is an added value when we talk of tourist offer, its quality and diversity, or when we talk about tourists' needs and motivations, attracting their attention and establishing their fidelity (Pereira, 2007). The primary references in the literature to the sports tourism phenomenon were about the hallmark sports events impacts and their relationship to the tourism, such as the Olympic Games in the ancient times, which attracted different nations to Olympia (Pereira, 2007). Several studies showed that sports events have been used as a strategy to attract tourists, taking an increasing role in the strategic plans of cities, regions and countries (Pereira, Mascarenhas, & Pires, 2012). The authors realized that research on events started in the 80´s and initially the studies were mainly focused on the analysis, post-events, of the impacts provided to host communities. A line of research with emphasis on leveraging the benefits of the event has been developed since the turn of the century (Chalip, 2000, 2004, 2006; Green, Costa, & Fitzgerald, 2003; O' Brien, 2006, 2007; O'Brien & Gardiner, 2006). Strategic leveraging is based on the premise that sports events could maximize the long and short term benefits of the events to host destination (Chalip, 2000, 2004). This author conceived an economic and a social leverage model (respectively, Chalip, 2004, 2006) to explain this type of approach, but scarce studies were developed applying these models and the author highlighted the importance of further empirical evidence.

This paper aims to analyze the leverage process of nautical sports events portfolio (Kite Masters Portimão World Tour, Formula Windsurfing World Championship, Sailing Audi Medcup, P1 Power Boats World Championship, Portimão Global Ocean Race, F1 H2O World Championship) hosted in a tourist community of Algarve / Portugal. For this purpose, based on the Chalip (2004, 2006)

theoretical models, strategic goals defined beyond these models will be identified and the corresponding implementation process analyzed.

2. Strategic leveraging

Senge (1990) was one of the first researchers who used the leverage concept applying to the organizations. Inspired in the work of J.W. Forrester on system dynamics, Senge (1990) considered leverage as the bottom line of systems thinking. He defined leverage as the human competence to identify actions and changes in structures leading to significant and enduring improvements. Later, the concept of leverage points was proposed by Meadows (1999) as "places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything" (p.1). In fact, the concept of leverage points is very powerful, and even being often seen as common sense is not so evident among most actors performing systems in real life (Senge, 1990). The author emphasizes the importance of characterizing and understanding the set of actions designed to maximize the benefits. For him it is essential to identify the actors involved, examine their relationships and how they relate as a whole.

Chalip (2000) transferred the concept of leverage to approach to the sports events. In the author´s perspective, sports events must be accomplished by a strategic view, which should sustain the events planning in the decision making process. The emphasis on the way that sports events could be potentiate is the key to achieve benefits to the communities. Australia has been mentioned as a good example to this approach due to the touristic perspective they developed in Olympic Games organization (Chalip, 2000). The author underlined five strategic points developed in Australia strategic plan, namely: lengthen Olympics visitors to other points in Australia; improvement of capacities to host business tourism and MICE (meetings, incentives, conventions and exibitions); and the creation of awareness to the Australia destination (Pereira, Batista, & Pires, 2010).

In this pioneering line of research, the author developed two models for strategic leveraging sports events approach: an economic model (Chalip, 2004), which is based on two strategic objectives: "to optimize total trade and revenue" and "to enhance host destination's image" (p. 229); and a social model (Chalip, 2006) that comprised objectives and means for "generating and cultivating liminality" (p. 114). In the latter, are also encompassed two specific targets, namely: "foster social interaction" and "prompt a feeling of celebration" (p. 114). Several studies have been developed in this area: Chalip and Costa (2005), Chalip and Leyens (2002), Green, Costa, and Fitzgerald (2003), Jago, Chalip, Brown, Mules, and Ali (2003), Kellet, Hede and Chalip (2008), and O'Brien (2006, 2007). Nonetheless, Ziakas and Costa (2010) reinforced the importance of focusing in the multifaceted roles of events, assuming that events could foster several goals.

3. Method

In order to integrate a deductive-inductive perspective, and simultaneously ensuring the nexus of the investigation (Hesse-Biber & Leavy, 2006), an evolutionary case study (Dawson, 2008) was used in the research. This type of case study allowed us to refine the instruments in the procedure of data collection and selection of the respondents, from one event to another during the investigation cycle. Eisenhardt (2002) qualified this procedure as fundamental whenever the investigation aspires to create theory from case studies because he considered that one of the essential keys for theory development consists in the researcher's freedom to make the necessary adjustments during the process of data collection.

3.1 Context

Portimão is a tourist resort in Portugal's major tourism region: Algarve. The destination was qualified as a mass tourism destination, related to an inadequate urban development model. But policymakers knew that this tourist destination had another sort of potential that should be explored in order to

gain visibility (Pereira, 2013). Portimão is a privileged town, set at the flank of a lagoon, a river and the sea. Policymakers decided to invest in hosting and sponsoring a set of diversified events, among which nautical events of international level represented the greatest share throughout the year. The author realized that one of the aims of this event-based strategy was to change Portimão´s image from a mass tourism destination and a typical sun and beach product to that of a nautical destination by the sea. In order to implement it, a Municipal Public Undertaking was created with the mission of promoting tourism, supporting events and developing tourism products, namely sports, cultural and business tourism (Expo Arade Statutes, 2006). The events were organized by specialized events' and tourism sectors of this public company in co-operation with other divisions of the municipality, namely with the Information and the Public Relations Office. In the course of our article, we will refer to this set of actors as the local public event organization committee (LEOC). The Public Undertaking appears most of the time with a double role - as the main sponsor and as the local event organization committee (LEOC) - and always in coordination with the external private organization holding the rights of the events (external event organization committee - EEOC).

3.2 Data Collection

The focus of data collection was the identification and description of the strategic goals and their implementation, beyond the strategic goals already defined in the economic and social frameworks created by Chalip (2004, 2006). As Saunders, Lewis, & Thornhill (2003) referred, a data-driven approach is the most appropriate to study research topics which have been less investigated, such as strategic leveraging of sports events.

For this study we selected a specific international nautical sports events' portfolio established throughout a year's term: Kite Masters Portimão World Tour (KM, 8 - 13 July 2008); Formula Windsurfing World Championship (FW, 9 - 14 September 2008); Sailing Audi MedCup (AM, 15 - 20 September 2008); P1 Power Boats World Championship (P1 PB, 26 - 28 September 2008); Portimão Global Ocean Race (PGOR, 12 October 2008 to 20 June 2009); F1 H2O World Championship (F1 H2O, 4 - 5 April 2009).

Fieldwork conducted from February of 2008 until April of 2010 was based on qualitative interviewing (before and during the events), direct observation and documental research of the events. During the research process, the interviews were carried in person lasting one hour in average and were tape-recorded. The interviewees were carefully chosen among political actors (PA, 4 actors), external event organization committee actors (EEOC, 16 actors), local event organization committee actors (LEOC, 9 actors), and local actors (LA, 30 actors from: local trade (18), tourism (8) and sport (4)). The on-site observation was a relevant part of this research (Edwards & Skinner, 2009), allowing us to understand the real practices. We observed all the events, which lasted 6 days in average, focusing on the implementation of actions related to the strategic goals previously announced in the interviews (Spradley, 1980). Information was gathered in the form of strategic documents (7), and press releases of the events (52), resulting in 59 collected documents.

3.3 Data analysis

The emergent concepts were inductively analyzed based on the general principles of grounded theory (Strauss & Corbin, 1990). The references related to new strategic objectives and their implementation, beyond the strategic goals already defined in the economic and social frameworks created by Chalip (2004, 2006), were coded in open concepts. Constant comparison of the later led to define the key emergent dimensions. The software - NVivo 9 by QSR International, supported the analysis and the interpretation of the information as the process was progressing (Di Gregorio & Davidson, 2008).

4. Results

4.1 Strategic goal emerging from the empirical study

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The data analysis of the leveraging process showed a strategic goal of the studied events, which was not in the leverage theoretical models, specifically "to innovate sports tourism products". This strategic goal was part of the vision defined by the event organizers in order to maximize the benefits of the events. The table below shows the findings related to this goal according the number of sources, type of actor and references codified.

Table 1: Innovate sports tourism products: number of sources, type of actor majority and references codified according to this goal

	Strategic goal		
	Sources	**Actors**	**References**
Innovate sports tourism products	22	EEOC+LEOC	33

The importance of events leveraging to capitalize the resources of the host destination emerged after the first event examined and was consistently found across all events, especially in the nautical wind sports events. The "innovate sports tourism products" dimension was shared mainly by LEOC and EEOC, but also by political and local actors, and was one of the main arguments used to influence the decision making process. The table 2 shows the two tactics developed to achieve that goal, namely: "creation and improvement of nautical sports services and facilities; "positioning and promotion as nautical destination". The first one is related to the adjustments in natural resources allowing the consolidation of sport tourism practice areas and the latter mostly associated to the definition, conception and distribution of the product.

Table 2: Strategic goal: "Innovate sports tourism products"

	References indicating the creation and promotion of facilities and products in the area of water sports to diversify the tourism offer
Actor	Example
Political actor 2	"Our strategy is to start developing products such as sailing, windsurfing, kite in a more systematic way, looking for more interesting and emergent markets"
Political actor 4	"to assume a position of Portimão as a nautical center of excellence, able to receive and deliver all types of nautical competitions and thereafter provide this knowledge to the world"
LEOC Strategic actor 3 Kite Masters	"According to the professionals, the nearby area of Alvor [one of the Portimão´s beachs] has unique conditions for the practice of windsurfing and kitesurfing. Thus, we decided to organize international events to help us position and promote these niches - windsurf and kitesurf. We must create conditions to attract people to Portimão, not only during these events, but throughout the year to spend a week and practice these sports. And at the end, this is the strategy that we chose and it was on this basis that we suggested the importance of investing in these events to the political executive"
EEOC Operational actor 1 Kite Masters	"I think that the most important in these events is to promote tourism focused in this type of sport - kite surfing - the natural beauty, the wind and the water here in Portimão"
EEOC Strategic actor 2 Formula Windsurfing	"capture quality tourism in different market niches, and windsurfing can be an advantage if they,[LEOC] know how to develop it"
	Creation and improvement of nautical sports services and facilities
LEOC Strategic actor 1 Kite Masters	"We have decided to invest more in nautical events to broadcast the message that this tourist destination holds all the conditions for the practice of nautical sports. Besides that, we have been doing investments in facilities"
LEOC Strategic actor 3 Kite Masters	"what we need now is to work with our partners, the local stakeholders, so that they can develop the products or niches and beyond to make people come to see and watch these events, we can create conditions so that people in other periods, than during these

	References indicating the creation and promotion of facilities and products in the area of water sports to diversify the tourism offer
	events, are likely to spend a week at Portimão and can practice this sport. And deep down, this is the strategy that we chose and it was on this basis that the executive hinted the importance of investing in these events."
EEOC Operational actor 5 Audi MedCup	"Somehow would be stupid, given the natural conditions that they have, not to invest in nautical tourism, in creating facilities for that nautical tourism to have capacity to grow. When I'm saying nautical tourism, I'm not just talking at sporting events, but in terms of tourism as well. And this effort has been to be done by the municipality, and there is this effort, I can tell you this "
	Positioning and promotion as nautical destination
EEOC Strategic actor 1 Kite Masters	"It is a strategy directed towards the development and growth of the tourist areas, through sport … We work with product development, and there are some products – such as the Kite Masters world championships - designed so that people can see the conditions for practicing this sport. Today there are several regions of the world as Fuerte Ventura, Tarifa, Flecheiras in Brazil, among a dozen more, where kite represents 90% of the communities' economic income, generally based on tourism"
LEOC Strategic actor 1 Kite Masters	"The events help attract people's attention to the natural conditions of the tourist destination"
LEOC Operational actor 1 Kite Masters	"Portimão comprises the ideal conditions for water sports and it makes sense to develop the various nautical disciplines. We are committed to the cruise port, to the various schools of surf, windsurf and kite. It makes sense to bet on the nautical segment"
EEOC Strategic actor 2 Formula Windsurfing	"is something particularly directed to the outside, on the point of view of promoting the destination as a place for the practice of sport."
EEOC Operational actor 2 Formula Windurfing	"Magazines and televisions showcase the pictures of the event, creating the sportsmen who practice windsurf such willingness and desire to know such Portimão or certain destination, where a big event or a World Championship was held. If you made there a World Cup because effectively there is fantastic conditions for them to practice"
EEOC Operational actor 5 Audi MedCup	Portimão has a clear objective which is to be truly a world city. I think that Portimão is now a brand of sports, bringing Power Boats, Windsurf, the Portimão Ocean Race, the TP52 [Audi Medcup]. When they bring these major world events, are showing the world that have a fantastic regatta course, have a fantastic weather, have a great marina, have good hotels, is a place where people can come and feel good "

4.2 Implementation process according to strategic goal emerging from the empirical study

Findings indicate that several actions were developed in order to implement the emerged strategic goal upper identified. The table 5 displays the results related to the actions developed, according the number of sources, type actor majority and references codified.

Table 3: Innovate sports tourism products: number of sources, type actor majority and references codified according to actions developed

	Actions		
	Sources	**Actors**	**References**
Innovate sports tourism products	17	EEOC+LEOC	32

The table below shows the number of actions developed by the different actors per event. The results display a major number of references related with to wind events, namely Kite Master and Formula Windsurfing. The kitesurf and the windsurf are niche markets directly connected with the nautical center projected to the area Alvor-Portimão.

Table 4: Innovate sports tourism products: number of actions developed by types of actors per event

	Kite Masters	Formula Wind surfing	Audi MedCup	P1 Power Boats	PGOR	F1 H2O
LEOC	2	2	1	1	2	2
EEOC	3	3	3	3	3	3
LA	1	1	0	0	0	0
PA	1	1	0	0	0	0
Total	7	7	4	4	5	5

The actions to "innovate sports tourism products" were mainly related to the promotion of the destination as a nautical destination (22 of 32 actions). Moreover, there were found two types of actions, systematically in all events, namely: press releases, celebration of contracts with specialized TV stations such as Sail TV and Sport TV (LEOC – strategic actor 1, 2, 3, 4, 6, 7, 8, 9). As one of the EEOC actors stated:

The region is always mentioned in all press releases and communication, not only because the place is Portimão and we have to remark it, but we are also concerned with increasing awareness to the product Portimão sailing, as a good spot with wind, harbor and hotels (EEOC – operational actor 4 – AM).

Since the beginning of the research we verified the implementation of actions related to the improvement of nautical sports facilities in order to contribute to the development of "innovative sports tourism products". These actions involved several actors and partnerships, as for example the one established between the LEOC and the Municipality with the Portuguese Ports Authority and the Regional Development and Coordinating Commission of the Algarve to scour the bottom areas and to create a nautical center. As a strategic LEOC actor pointed out in some public occasions, namely at Formula Windsurfing event opening ceremony:

We are renovating the Alvor beach and part of the project is to build a nautical center. This is a partnership project between the Municipality and the Regional Development and Coordinating Commission of the Algarve. We were [Expo Arade] the responsible for the idea - to have a center that could support nautical activities. The events purpose is to attract people's attention to the natural conditions but then we must create facilities in order to keep people in this area. (LEOC – strategic actor 1 – FW)

Later in our research, more precisely in 2010, we perceived actions in order to conceive nautical sports services. The Municipality created a local tourism association - Portimão Tourism Association (ATP) - with the private and the public sector. The 5th article of the Association of Tourism of Portimão (ATP) Statute stated: "to develop studies and projects to qualify the tourism products/services of the Municipality" (ATP Statutes, 2010, p. 3). A national tourism newspaper made reference to this:

The ATP was formally constituted in December last year by the Portimão Municipality and more than 60 businessmen, representing 100 local enterprises. Its aim is to "develop and reinforce the image of the city as a tourism destination, allowing a greater negotiating power with providers, international tour operators and national decision-makers (Publituris newspaper, 2011, p. 2).

5. Discussion

The empirical study revealed that "to innovate sports tourism products", was an emerged goal, which was articulated by strategic interveners, including LEOCs and EEOCs, as well as political actors. The "innovation of sports tourism products" as a goal was highlighted mainly in the Kite Masters, Formula Windsurfing and Sailing Audi MedCup events. Moreover, actions implemented in order to reach this goal were more focused in promotion of the destination as a nautical destination. Some of the LEOC actors believed that the events were enough to create a dynamic sport destination, and hosting the events was the main action developed and a lack of other actions was visible. In this sense, Chalip (2005) and Harrison-Hill and Chalip (2005) emphasized that when nautical events fit

with the destination main resources could contribute to build the destination brand, but the events are not sufficient by themselves to create products.

However, long after - 2010, the Municipality used a strategic approach involving the local private sector and created a new organization, which focus is the development of products. In our opinion, this could be a step towards the achievement of innovation in sport tourism products, as long as this organization comprises sport organizations of the community as well. Several authors (Devine, Boyd, & Boyle, 2010; Weed, 2003; Ziakas & Costa, 2011) suggested, as an obstacle for sport tourism advance, the fragmentation of sport and tourism communities. The fragmented and different organizational cultures among sport and tourism organizations were already pointed out by Weed (2001). Ziakas (2010) showed that the lack of relationship between the local departments decreased the efficacy of events. Kuščer (2013) also underlined the importance of stakeholder participation to achieve innovation in order to sustain the competitiveness in tourism destinations. The results of his research in mountain destination innovation revealed the following relevant factors for innovation: stakeholder participation, sociocultural sustainability, environmental sustainability and proactivity.

We realized that the events were also constituted as a platform for connectivity and diversity, creating a space and a time for local communicative interaction, facilitating the evolution of the dynamics in the Municipality of Portimão. Being in contact with several professionals (federations, sportspeople, media and all the EEOC staff), the events created the awareness to the excellent conditions of Portimão´s area to water sports practices, as so, enhanced the experience about these markets, their needs and motivations. . More, besides the fact that the world championships were hosted on this destination, it was possible to strengthen the guarantee of the excellent natural conditions of the area of Portimão to innovate in sports tourism products in the minds of all involved stakeholders. Paget, Dimanche and Mounet (2010) pointed out the importance of the resources in the innovation process. The authors examined the innovations in a French ski resort and realized that existing resources can be reconfigured to create unique and innovative products that will ensure a company's success. The products "Levadas" is an example of an innovative touristic product based on the natural resources, which constitutes a niche market to nature and active tourism to the Madeira Island (Almeida, Soares, & Alves, 2013).

We highlighted that the innovative vision to Portimão destination is integrated in a global vision for the country. The National Strategy for the Sea (2006-2016) approved by Resolution of Council of Ministers No. 163/2006 of 12 December advocated a series of actions and measures, particularly in Chapter V, viewing the exploitation of the opportunities identified in the areas of tourism and the development of nautical recreational, valuing the sea as a differentiator of tourism and stimulating activities linked to the sea allowing the use of free time, leisure and sport (Pereira, 2008). In this line, Spain has been developing the nautical station concept, serving recreational and tourist purposes, allowing the practice of all kinds of nautical activities during leisure time - concept of active holiday at sea. Its aim was to take advantage of the natural resources that involvement as the Mar Menor enabled in order to break the strong seasonality felt in this region (Galindo, 2003).

6. Conclusions

The results showed that the events strategic leveraging could comprise new goals, beyond those defined in the Chalip models (2004, 2006), namely "innovate sports tourism products". Innovation of sports tourism products was part of the vision defined by the event organizers in order to maximize the benefits of the events and was regularly found across all events, especially in the nautical wind sports events, and was developed through two tactics, i.e: "creation and improvement of nautical sports services and facilities; and "positioning and promotion as nautical destination". This strategic goal was shared by LEOC, EEOC, political and local actors. On the other hand, the findings showed a few actions in order to "create and improve nautical sports services and facilities".

Most of all, we verified the importance of the nautical even-based strategy to confirm the natural resources' quality, and to create awareness and experience to the importance of this destination as a

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nautical destination resort, due the connectivity and diversity of actors. Above all, we recommend a proactive and network approach in this domain to boost innovative territories, due to the lack of relationship between sport and tourism departments.

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CREATIVE MINDS AND COMMERCIAL SPIRITS - INNOVATION AND RENTS FROM NATURAL RESOURCES IN REMOTE MARITIME REGIONS

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Abstract: The aim if this paper is to understand the attitudes of "creative minds and commercial spirits" in remote maritime regions within the challenge of the European Marine Strategy. The main hypothesis to be exploited, focusing on the growing search of new maritime resources, is that innovation can be seen as a rent seeking phenomena not only through time – as is commonly understood in a Schumpeterian perspective - but also throughout space, where the allocation or appropriation of property rights play a crucial role. We look into the attitudes of key marine stakeholders in Horta related to changes in marine property rights implicit in the European Marine Strategy. We conclude that innovation and development in remote areas is strongly related to the influence that innovative entrepreneurs have on the redefinition of property rights and related allocation of rents from natural resources.

Keywords: marine strategy, innovation, rents, natural resources, property rights.

1. Introduction

Most of the innovation and development literature emphases the relevance of agglomeration economies in big cities that continue to be the major engine for knowledge spillovers, technological innovation and economic growth, despite the wishful dream of the death of spatial attrition associated with the dramatic decreases in the costs of transportation and communication (de Groot et al, 2007). This justifies the major interest in explaining the nature of agglomeration externalities on knowledge spillovers, on technological innovation and, finally, on economic growth. The theoretical bases of these hypothetical causal connections comes from the endogenization of technological innovation of the growth theory developed by Solow (1956), coming from the seminal papers by Romer (1986) and Lucas (1988), and further explored with the work of Krugman (1991, 1995) that established the theoretical connection between spatial agglomeration economies and economic growth (de Groot et al, 2001) focusing on the knowledge flows between people, organizations happen occur more easily within the geographical proximity (McCann and Simonen, 2005) but can also be identified looking both at geographical and technological proximities (Oerlemand et al., 2001; LeSage et. al, 2007).

The major point behind that explanation is that, from the two geographical attributes of regional development highlighted by Krugman (1991) - accessibility and scale - scale or production capacities, very much associated with agglomeration externalities (Krugman, 1995), is more important for innovation and growth than accessibility or consumptive capabilities, denouncing therefore the enduring common sense of regional development policies that assumes that regional development is closely associated with the access to goods and services (Lopes, 1979) and, more recently, access to knowledge and technology (Barca, 2009).

There is no doubt that the World is spiky and increasingly spiky (Florida, 2005). The question is that if is for the good reasons and with the best effects? What is, in the end, the viable solution to prevent the technological and development gap between core and periphery? Rodriguéz-Pose and Ceh (2001) suggest that R&D investment in lagging regions may be the solution but probably there are new assumptions to introduce in the accepted causalities between knowledge creation, innovation and development. On the one hand, the importance of natural, technological, human and cultural capabilities and constraints (Capello, 2002) in the process of innovation in remote areas and, therefore, the possibility of remove some of these barriers, on the other the role of the spatial allocation of the rents of natural resources on the spatial patterns of development (Dentinho, 2012).

The aim of this paper is to know whether the pattern of interactions between human and the environment - namely in which concerns the location of environmental knowledge and the spatial allocation of the rents of natural resources - is important for the process of innovation and development in more remote regions. The main idea to be discussed is that, focusing the continuous searching of new maritime resources, innovation can be seen as a rent seeking phenomena not only through time – as is commonly understood in a creative destruction process (Shumpeter, 1934) - but also throughout space, where the allocation or appropriation of property rights plays a crucial role.

To achieve that we, first, review the literature on knowledge, innovation and regional development and propose two interconnected assumptions to the accepted causalities: on the one hand, the importance of natural, technological, human and cultural capabilities and constraints in the process of innovation in remote areas, on the other hand the role of the spatial allocation of the rents of natural resources on the spatial patterns of development. We analyze the context of the marine area of Faial Island, in the Azores, and look into the values and the attitudes of the main stakeholders focusing on the creative and commercial spirits of recent marine activities (whale watching, aquaculture, traditional sailing, selective fishing, recollection of specimens for zoos at world scale, environmental education [Oceanoscópio - http://www.oceanoscopio.com], biotechnology, computing applications on fisheries assessment, http://www.linkb2b.pt/empresas/fishmetrics-512106100.php). Finally we discuss the progress of these innovative activities in the local milieu of submerged competitive complementarities (or unrevealed agglomeration economies) between environment, technology, institutions and economy; their impact on regional competitiveness; and on their unsuspected potential contribution for the Marine Strategy. We conclude by suggesting that there is a need, on the one hand, to look into the spatial, technological and also environmental agglomeration externalities, and, on the other hand, to address the issue of the spatial allocation of rents generated by those externalities.

In point 2 we conceptualize the assumption that the allocation and appropriation of property rights play an important role on the spatial pattern of innovation and development particularly in remote areas where natural resources play a crucial role. In point 3 we synthesize the European Marine Strategy and describe the context of the maritime city of Horta, where we would like to perceive the interactions between knowledge, innovation, creative attitudes and property rights. In point 4 we look into the effects of changes in property rights implicit in the European Marine Strategy in the attitudes of key marine stakeholders. We conclude in point 4 by discussing the possibilities of innovation and place-rooted creativity (Florida, 2003) in remote small regions.

2. Property rights, rents, innovation and development in remote regions

In the long term the payment of most production factors such as labor, capital and entrepreneurship must be made according to their marginal productivity to the places where those factors are based. Nevertheless this is not always the case for rents of natural resources, where spatial allocation is influenced by the spatial distribution of property rights and not necessarily by the territorial distribution of the natural resource. And if the spatial distribution of property rights is different from the distribution of territorial resources it is quite likely the existence of two types of permanent unilateral transferences: i) on the one hand, from the places where resources are used to the locations where their owners are established, following the old Von Thünen (1826) divide between farmers – located in the country side - and landlords – that reside in the city; ii) on the other hand, from the owners, usually central places, to those that control property and collect the rents in the periphery. The point is that the exploited user of the territory is not necessarily located in the same place as the fiscal of the property rights; and neither of those must coincide with the rent owner of the property rights, public or private.

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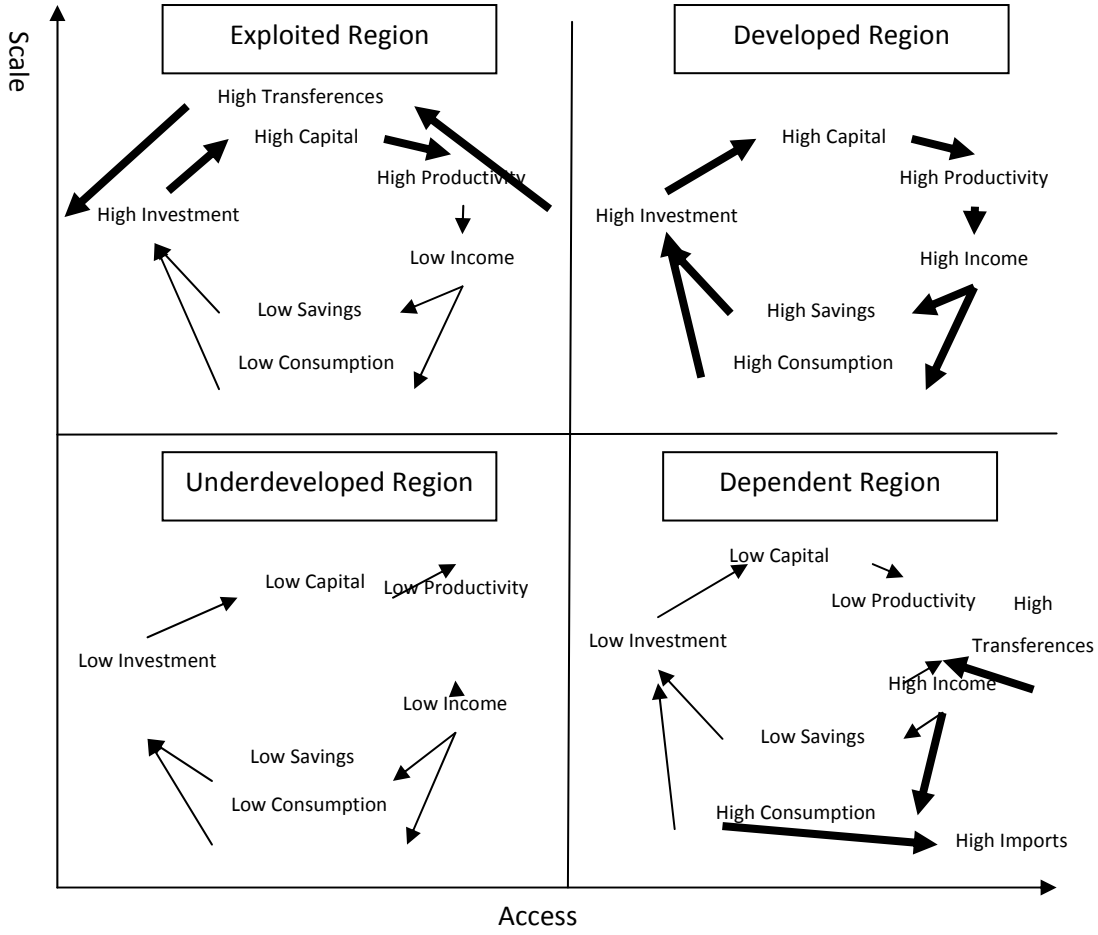
Using the two geographical attributes proposed by Paul Krugman (1991): scale and accessibility, it is possible to define, not just two, but four types of development settings: developed, underdeveloped, dependent and exploited (Dentinho, 1995). Developed regions are the ones that have accessibility and scale where the virtuous circle of development work as expected, with increasing productivity sustaining growing consumption and investment, allowing innovation and snowballing productivity (Figure 1, NE). Underdeveloped places are those that suffer from vicious circles of poverty (Furtado, 1976), often because they lack scale and accessibility as can be testified in many poor regions where reduced productivity limits consumption, impedes investment, discourages innovation and keeps income at subsistence levels (Figure 1, SW).

Figure 1: Typology of Regional Development

Nevertheless there are two other types of regions. Exploited regions have scale but lack access



because part of the income generated is drawn outside; in this case the virtuous circle of development runs outside the region that receives investment but not the related income (Figure 1, NW). Finally, dependent regions receive systematically unilateral transferences from outside which strengthen the access without reinforcing scale, innovation and investment, at least in terms of tradable goods and services (Figure 1, SE).

Will the innovation process be different in each one of the situations presented in Figure 1? Taking into account that innovation is mainly related to the production process it seems that both underdeveloped regions and dependent regions would have less aptitude to experience effective innovations than exploited or developed regions; furthermore innovations in exploited regions would tend to favor central agents based in developed areas. Nevertheless entrepreneurial capacity is a characteristic of mankind and not of places by themselves. And some “windows of opportunity” can

appear in relatively less developed regions because there is trust and creative interactions (Camagni, 1991, Storper, 1992, 1993) that can promote flexible specialization (Geenhuizen e van der Knaap, 1994), suitable productive tissues to attract foreign investment (Amin, 1993), good places for ethnic entrepreneurs (Baycan Levent et al., 2008), or because there is some natural protection associated with remoteness (Nijkamp, 2009).

Nevertheless natural protection and remoteness is a relative concept since modifications in accessibility – technological, economic and institutional - can alter remoteness and change the natural protection that allowed some degree of technological innovation and development in those remote places where men and environment interact with each other to get the rents from natural resources augmented by far away markets. In the process of accessibility changes, the establishment and enforcement of property rights over natural resources can be crucial for the creation or destruction of "windows of opportunity" for innovation and development in remote places.

Regarding property rights of natural resources, namely property rights over remote marine resources, it seems important to pick-up and expand the systematization proposed by Schlager & Ostrom (1992) and Ostrom & Schlager (1996). Their message is that, on the one hand, within the idea "common property resources", very much used regarding marine resources, there are an all set of different situations including: a) property owned by a government; b) property owned by no one; and c) property owned and defended by a community of resource users. On the other hand, the authors claim that, those property rights – both private and common (Ostrom and Hess, 2007) can be allocated to different degrees of ownership from entrants, users, claimants, proprietor and owners. Owners, private and common, have the incentive to long term investment in the resources but do not guarantee the sustainability of the resource for higher discount rates. Proprietors have similar incentives but they are against multiple or alternative uses of the resources. Claimants tend to invest in government intervention to secure their revenues since they do not have the capacity to exclude complementary or alternative uses of the resources. Users do not control the rules so they tend to overinvest in withdrawals. Data collectors have the incentive to invest in government intervention for alternatives uses of the resources. And, entrants try to secure their rights to visitation and passage. The inclusion of data collector seems to be very important when resources are new unknown because they can challenge the property rights of users, claimants and proprietors; and if there are no established owners they can even claim ownership.

Table 1: Bundles of Rights Associated with Positions; adapted from (Ostrom & Schlager, 1996)

	Owner	**Proprietor**	**Claimant**	**User**	**Data Collector**	**Entrant**
	Individuals who possess collective - choice rights to participate in management and exclusion and can lease or sell them	Individuals who possess collective - choice rights to participate in management and exclusion.	Individuals who possess the same rights as authorized users plus the collective-choice management.	Individuals holding operational rights of access and withdrawal that can transfer or sell those rights	Individuals holding rights of access to produce knowledge that influence management, exclusion and alienation	Individuals holding operational rights of access
Access: The right to enter a defined physical property.	X	X	X	X	X	X
Data collection: The right to obtain information of a resource	X	X	X	X	X	
Withdrawal: The right to obtain the "products" of a resource	X	X	X	X		
Management- The right to regulate use and improve resources	X	X	X			
Exclusion: The right to say who has rights and how to transfer them.	X	X				
Alienation: The right to sell or lease either or both of the above collective choice rights	X					

In the present paper we expand the analytical grid on property rights to include data collectors (Table 1) and use it to look into the regulation of natural resources in Faial trying to understand the way it interconnects with innovation and development. Schlager & Ostrom (1992) applied their

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scheme to Main Lobster fisheries, (Yandle, 2003, 2007) used the same scheme to perform the analysis of marine resources in New Zealand. We pretend to look at a simple and yet European and Global Case such as the European Marine Strategy looking into the attitudes of creative and commercials spirits in the periphery and its interconnection with property rights.

3. Knowledge, innovations and property rights for the marine stakeholders of Horta

3.1 The European Marine Strategy

The European Marine Strategy (COM, 2007) seeks the sustainable use of the seas and the conservation of marine ecosystems. According to the European Commission (COM, 2010) this is done by promoting the integration of governance structures; building the knowledge base and enabling the implementation of integrated policies. In practice it is consubstantiated in ten work plans: i) Elimination of maritime barriers; ii) Promotion of a strategy for European research (COM, 2010a; COM, 2010c); iii) Coordination of national maritime policies; iv) Creation of a European network for Maritime Surveillance Systems focused on the sharing of data related to fisheries, traffic, security and vessel reports (COM, 2009b); v) Implementation of maritime spatial plans and integrated management of coastal areas, to provide jobs, economic benefits, legal certainty, equal opportunities for all maritime sectors and environmental sustainability (COM, 2010b); vi) Development of policies to reduce the effects of climate change in coastal areas (COM, 2009a), looking into vulnerability, responsibility, national practices and expenditures; vii) Reduction of CO2 emissions by the vessels; viii) Elimination of illegal fisheries; ix) Creation of a European network of maritime clusters; and x) Addressing issues related to labor legislation in fisheries and maritime transportation (COM, 2007). Most of these actions are derived into European Directives that once transferred to the nationals sets of rules that, if and when enforceable, represent clear changes in marine property rights. The issue in this paper is whether and how those changes contribute to the process of innovation and development in the maritime city of Horta.

3.2 Knowledge, regulation, innovation and creativity in Horta

Horta, with 10000 inhabitants, is a small maritime city in the island of Faial that has 15000 persons. Faial is one of the nine islands of the Azores Archipelago, with 240000 residents. The economic base of the Azores is just 25.1% of the final demand and mainly constituted by dairy and beef exports (32.5%), unilateral transfers (28.1%), other exports – mainly from transport, financial services and other agricultural products (24.4%) - tourism (10.4%), and fishery (4.6%). Looking at Table 2 for columns “Faial”, it is clear that fisheries (5,3% as opposed to 4,6%) and tourism (14,5% compared with 10,4%), mostly associated with marine activities, play a larger role in the economic base of Faial and nearby islands of Pico and São Jorge than in the rest of the archipelago.

As pointed by (Santos et al. 2005a, 2009a) Marine research in the Azores is a recent phenomenon and almost inexistent until the end of the XIX century when Prince Albert of Monaco visited the islands in a series of research expeditions. Resident researchers began their work in the late seventies of the XX century and observed the collapse of the stocks of limpets that showed the importance of applied marine research to support the management of the sea. In the late nineties it was possible to propose, based on scientific grounds, a few marine protected areas and, following that, a network of Natura 2000 sites, indicating the capacity of “Data Collectors” (Table 1) to produce knowledge that influence management and exclusion. Interestingly that same capacity is used subsequently to design policies on seamounts and hydrothermal fields in the Mid Atlantic Ridge outside the territorial waters of Portugal (Santos et al. 2009b, Ribeiro 2010).

Table 2. Structure of the Economic Base of the Islands (Haddad et al. 2012)

	Santa Maria	*São Miguel*	*Terceira*	*Graciosa*	*São Jorge*	*Pico*	*Faial*	*Flores*	*Corvo*	*Total*
Exports Agro Portugal	13.8%	31.4%	33.7%	51.1%	41.5%	33.9%	30.8%	29.6%	21.8%	32.0%
Exports Agro Other	0.2%	0.4%	0.5%	1.6%	0.4%	0.3%	1.1%	0.3%	0.1%	0.5%
Exports Fishery Portugal	1.8%	2.5%	1.8%	1.7%	3.9%	12.6%	3.4%	1.0%	3.1%	3.0%
Exports Fishery Other	1.0%	1.3%	0.9%	0.6%	2.3%	7.5%	1.9%	0.4%	1.2%	1.6%
Exports Other Portugal	44.6%	22.5%	9.6%	5.5%	12.8%	5.4%	17.1%	18.9%	4.9%	18.6%
Exports Other Other	14.5%	6.6%	3.6%	2.2%	2.5%	2.3%	5.7%	6.5%	2.6%	5.8%
Tourism Portugal	2.8%	3.9%	4.6%	4.7%	3.3%	5.2%	7.4%	6.0%	1.5%	4.4%
Tourism Other	2.8%	7.0%	3.9%	2.3%	3.2%	6.5%	7.1%	6.9%	1.0%	6.0%
Government (dependent)*	18.5%	24.3%	41.4%	30.4%	30.2%	26.0%	25.6%	30.4%	64.0%	28.1%
Economic Base	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Government expenditures financed by external transfers

And because Horta, is also the place of Regional Parliament apart from headquarters of the Fisheries Department of the Regional Government and domicile of the Fisheries Department of the Azores University (Santos et al. 1995b), the process that goes from marine research to marine law is relatively straightforward (Calado et al. 2011), facilitating up the development of new property rights and new users, claimants, proprietors and owners of the marine resources. And with the whole sorts of economic activities are being developed, helping to define rules, generating rents, stimulating innovation and promoting development: whale watching, aquaculture in open sea and recollection of specimens for zoos at world scale.

Whale watching began a few years after the ban on whaling in the Azores in 1984/87 (Santos et al 1995a). Entrepreneurs were able to influence and, with direct connection with the authorities, endorse rules that controlled the access for whale watching companies. For instance there are potential complementarities between whale sailing and whale watching that are not properly explored because the regulation assumes that whale watching must be done preferably from small motor boats (Dentinho e Machado, 2007), also deterring large boats to access the business. Whale watching entrepreneurs were also wise to involve former whalers showing the interesting capacity to reinvent the use of the marine resources (thr-Graça 2004, Oliveira et al. 2007a, b).

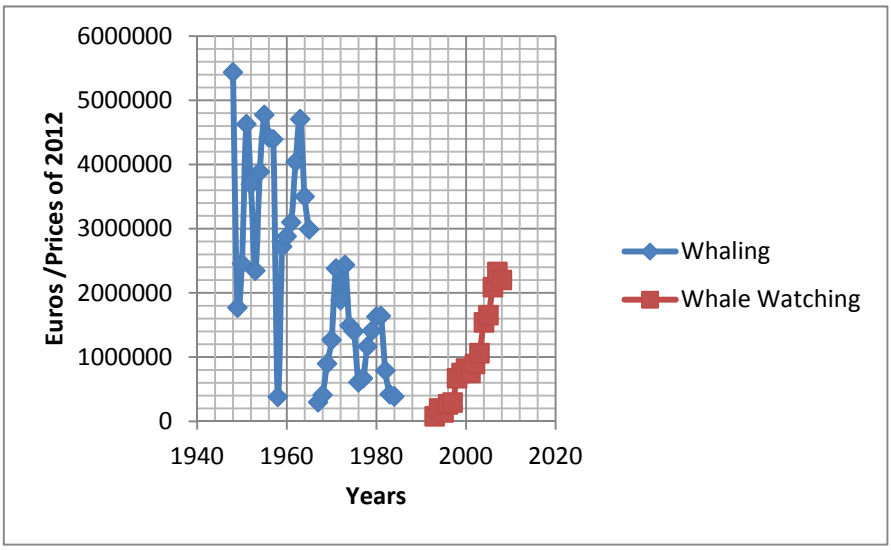

Figure 2: Revenues from Whaling and Whale Watching in Pico Faial Region

Aquaculture in open seas is another interesting initiative, just in the beginning, to produce barnacles, a crustacean much appreciated throughout the archipelago and part of the traditional cuisine in the Azores. There have been close contacts with Regional Directorate of the Environment on the permit applications and the feasibility studies indicate that, with more durable structures the profitability of the project is promising (Lopez 2010).

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The recollection of specimens for zoos at world scale is another interesting example of a good combination between knowledge, innovation, creative attitudes and definition of property rights. The Flying Sharks, established in 2006 and owned by a marine researcher, catching fish to order, using the services of fishermen and divers, and with equipment suitable for maintaining the animals captured. Since its establishment, has exported animals to aquariums of Valencia (Spain), Georgia and Virginia (USA), Dubai (United Arab Emirates), Stralsund (Germany), Tokyo (Japan), Lisbon and Porto.

4. Stakeholders attitudes

In this point we use a Q Method approach (Stephenson, 1953; Gil and Guimarães, 2011) to look into the effects of changes in property rights implicit in the European Marine Strategy, and related statements, in the attitudes of key marine stakeholders in Horta. A first set of 85 statements were taken from various sources (Annex 1a); many of them are from documents on the European Marine Strategy, others are from the Roundtable discussion during: "Exploring the wealth of coastal fisheries: Listening to community voices" 21 -24 October 2011 Angra do Heroísmo & Ponta Delgada; finally more specific statements are from some innovative people in Faial. A second step involved the selection and synthesis of 36 of the 85 statements with the criteria of avoiding redundancies and including different marine issues: - fisheries; - whale watching; - aquaculture; - pollution; - biodiversity; - research; - marine policy; EEZ expansion;… In a third phase a grupo of marine stakeholders – fishermen, sailors, local and regional politicians, maritime touristic operators, innovative entrepreneurs and marine researchers were asked to rank the selected phrases on bell shape form (Annex 2). Finally we perform discriminant analysis for significant Eigen Values with Varimax Rotation using the Kaiser Method, taking the stakeholders as variables and the phrases as observations. The seven significant components explain 76% of the total variation; result in a synthesis of the 21 stakeholder attitudes into seven profiles that we will try to associate with the Property Rights Situations proposed in Table 2: owners, proprietors, claimants, users, data collectors and entrants.

Looking at the results in Table 3 the first idea that comes up is that the first components do not explain much of the total variance indicating some lack of consensual positions on the selected phrases.

Table 3: Total Variance Explained by Discriminant Analysis of the Statements Rankings

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Comp	Total	% of Var	Cum. %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	6,26	29,80	29,80	6,26	29,80	29,80	3,02	14,39	14,39
2	2,56	12,18	41,98	2,56	12,18	41,98	2,64	12,59	26,98
3	2,20	10,46	52,44	2,20	10,46	52,44	2,63	12,52	39,50
4	1,52	7,26	59,70	1,52	7,26	59,70	2,43	11,56	51,06
5	1,29	6,17	65,86	1,29	6,17	65,86	2,05	9,76	60,82
6	1,15	5,47	71,34	1,15	5,47	71,34	2,01	9,59	70,41
7	1,01	4,79	76,13	1,01	4,79	76,13	1,20	5,71	76,13
8	0,90	4,29	80,42						
9	0,74	3,54	83,96						
10	0,58	2,76	86,72						
11	0,48	2,28	89,00						
12	0,46	2,21	91,21						
13	0,42	2,02	93,23						
14	0,36	1,71	94,94						
15	0,35	1,65	96,58						
16	0,25	1,21	97,79						
17	0,16	0,77	98,56						
18	0,11	0,53	99,09						
19	0,10	0,48	99,57						
20	0,08	0,40	99,97						
21	0,01	0,03	100,00						

Table 4 presents the Correlation of the twenty-one Individual Attitudes with the Seven composed attitudes.

Table 4: Correlation of the Individual Attitudes with the Composed Attitudes

		Components						
Occupation	Sector	1	2	3	4	5	6	7
Entrepreneur	Fisheries	,930	,088	-,044	-,049	,091	,004	,002
Entrepreneur	Fisheries	,866	,251	,021	,026	,041	,106	,083
Employee	Journalism	,566	,446	,156	-,194	,328	,305	,006
Researcher	Fisheries	,548	,122	,238	,211	,407	-,177	-,034
Employee	Journalism	,475	-,272	,324	,281	-,098	,244	,252
Researcher	Fisheries	,414	,152	,129	-,030	,445	,325	-,112
Entrepreneur	Tourism	,397	,808	,020	-,010	-,050	,138	,028
Consultant	Environment	,032	,727	,333	-,029	,344	-,118	-,004
Consultant	Shipping	,168	,715	,356	,139	,103	,249	,058
Employee	Administration	,024	,419	,192	,026	,098	,421	-,622
Researcher	Marine	,255	,014	,811	-,008	,015	-,092	-,255
Researcher	Marine	,050	,226	,728	-,196	,033	,342	,013
Employee	Journalism	-,091	,311	,681	,130	,284	,073	,234
Researcher	Marine	-,054	,283	,627	,379	,039	,337	-,024
Politician	Assembly	,008	,032	-,003	,959	,122	,042	-,038
Politician	Assembly	,031	-,020	,049	,957	,109	,075	-,037
Politician	Assembly	,101	,177	,161	,076	,809	,172	-,073
Researcher	Social	,110	-,007	-,087	,274	,743	,153	,352
Politician	Local	,279	,052	,251	-,103	,226	,737	,031
Politician	Local	-,054	,116	,041	,315	,119	,710	,075
Employee	Marine	,133	,344	,039	-,134	,189	,298	,682

The association of each one of these composed attitudes with the classification proposed in Table 2 (owners, proprietors, claimants, users, data collectors and entrants) can be attempt in this stage of the analysis and then reassessed by the analysis (in Figures 3 to 9) of the implicit rankings of each one of these components. Component 1 is strongly linked to fishermen that are in fact "Users" of the marine resources since they are "Individuals holding operational rights of access, withdrawal marine resources and can transfer or sell those rights". Component 2, that gather the attitudes of touristic and shipping operators, can be more related to "Entrants" as they are "Individuals holding operational rights of access the sea". Following the same exercise Component 3, where the Principal Component Exercise located most marine researchers, is necessarily connected with "Data Collectors" or those "Individuals holding rights of access to produce knowledge that influence management, exclusion and alienation". Politicians are linked with Components 4, 5 and 6 and we will see whether to allocate them to "Owners", "Proprietors" or "Claimants". Finally, Component 7 can be an interesting outlier to highlight some revealing propriety rights still missing from the Property Rights Positions of Table 2.

We can now look at the ranking contained in each derived component (Figures 3 to 9) using the Property Rights nomenclature and comment the results.

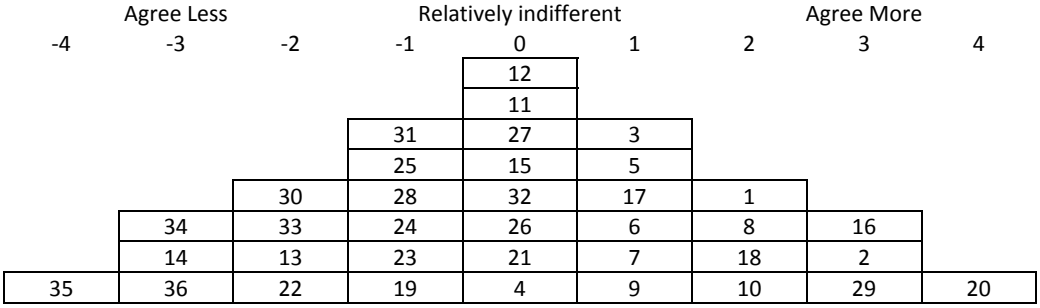

Figure 3: Component 1 – Users – Fishermen

Interestingly the phrase that obtained most agreement for the "Users" perspective is clearly related with withdrawal property rights "The management system has limitations and the total tradable catch quota system is a big threat to the fishing communities especially the small ones of the Azores" (Statement 20); and the same happens with Statement 16 that refers to the control of withdrawal property rights "Pressure on the Azores EEZ is growing especially by boats from Spain, France and Mainland Portugal". All this associated with the benign statements concerned with sustainability "With an ecosystem approach to management of human activities, priority should be given to maintaining good environmental status of the marine environment in Europe" (Statement 2) and with education (Statement 29) "The inclusion of themes of sea and fisheries on formal education would value fishing communities on each island". The attitude of the "Users" becomes much more clear when we notice the reaction against newcomers, reacting negatively to conflicts management (Statement 34) "The value of the sea is associated with having a good adjustment between conflicting uses of marine resources", innovation in the use of marine resources (Statement 35) "Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture" and to major changes on the regulated resources (Statement 36) "The expansion of the EEZ to 350 miles is fundamental to the sustainable development of communities Azorean". Statement 14 "Beautiful things is when we go in midsummer, in a motor boat, full of fish" is avoided by most of the perspective which is quite revealing because being a clear emotional statement, the general disagreement on it indicates the reasonability of the other rankings.

Agree Less			Relatively indifferent			Agree More		
-4	-3	-2	-1	0	1	2	3	4
				7				
				15				
			9	16	1			
			12	18	2			
		21	36	22	5	24		
	31	26	13	20	29	19	33	
	27	8	3	35	30	23	34	
17	14	32	11	6	28	25	10	4

Figure 4: Component 2 – Entrants – Tourist and Shipping Operators

Perspective or component 2 is connected with – Entrants – Tourist and Shipping Operators (Figure 4). Comparing with the "Users" perspective it is clear that most of its extreme statements move to indifference except for (Statement 34), related to conflict management that "Entrants" favor greatly which is understandable since they are new and developing activities somehow conflicting with fisheries. Interestingly "Entrants" make an alliance the "Data Collectors" to influence regulation (Statement 33) "Marine Strategy should provide for innovative activities that promote the sustainable use of marine resources", want to impose regulation on fisheries (Statement 10) "Fisheries and other human activities affecting the populations of fish and seafood trade should not catch more than the maximum sustainable catch"; and plan to get new propriety rights requesting that (Statement 4) "The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas". "Entrants" reinforce their disagreement with fishermen "Users" and other innovative stakeholders on statements latters agree (Statement 17) "When a fisherman sees a foreign boat fishing illegally and denounces it, it is too far away to do something", (Statement 27) "Vessels large and sophisticated cause great havoc on marine resources", (Statement 31) "Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development".

Agree Less			Relatively indifferent			Agree More		
-4	-3	-2	-1	0	1	2	3	4
				24				
				2				
			25	19	20			
			12	29	6			
		16	30	17	8	21		
	15	5	13	26	4	23	31	
	14	11	9	35	34	33	32	
18	7	36	22	1	28	27	3	10

Figure 5: Component 3 – Data Collector – Marine Researchers

Component 3, linked with researchers of "Data Collectors" is represented in Figure 5. The major difference from the "Entrants" is that "Data Collectors" consider that (Statement 31)) "Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development" but they strongly agree with "Entrants" with strong regulation on fisheries (Statement 10) "Fisheries and other human activities affecting the populations of fish and seafood trade should not catch more than the maximum sustainable catch". What "Data Collectors" add to the former perspectives is a more global view on marine resources and in the respective regulation (Statement 3) "Coastal waters, the seabed and subsoil are an integral part of the marine environment and should be covered by the European Marine Strategy" including the cultural heritage (Statement 32) "All whaling heritage deserves to be restored and preserved". On the other hand "Data Collectors" strongly disagree with the dependence of human activity on marine resources (Statement 7) "Human activity at sea and in coastal areas is essential to economic stability", the capacity to influence the government on particular issues (Statement 15) "If we were strong together with our government we would not be discussing the 200 miles but a lower area of 100 miles" indicating some experience on that influence. Finally "Data Collectors", confirming their experience in dealing with regulators, also deny that "The power of money, the electoral power and influence of large companies reduce the prospects of small fisheries leading Europe to defend roach fishing instead of sustainable fisheries".

Agree Less			Relatively indifferent			Agree More		
-4	-3	-2	-1	0	1	2	3	4
				25				
				9				
			14	4	33			
			13	2	8			
		3	32	24	35	36		
	18	5	27	23	12	15	31	
	7	19	26	21	34	30	29	
22	6	20	17	10	28	1	11	16

Figure 6: Component 4 – Claimants - Politicians for Innovation

Component 4, linked with Politicians for Innovation, or "Claimants" of new property rights, is represented in Figure 6. They defend the strong control of maritime property rights (Statement 16), and the innovative activities such as "Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development" (Statement 31) or "The extensive and semi extensive aquaculture can help reduce the pressure on the marine environment and generate significant economic benefits" (Statement 11). Interestingly they are strongly against that "The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island" (Statement 22).

Component 5, associated with Politicians for the European Strategy, and can be identified with "Owners" of property rights since they are less worried about the control of the EEZ and more in tune with the European Marine Strategy (Figure 7). They allocate all the property rights to European

Control (Statement 3) “Coastal waters, the seabed and subsoil are an integral part of the marine environment and should be covered by the European Marine Strategy” and, as Politicians for Innovation, they are also strongly against that “The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island” (Statement 22).

Agree Less			Relatively indifferent			Agree More		
-4	-3	-2	-1	0	1	2	3	4
				24				
				2				
			8	36	27			
			23	32	14			
		13	28	31	6	25		
	21	17	4	12	10	9	18	
	26	29	5	34	35	1	11	
22	20	15	16	19	7	33	30	3

Figure 7: Component 5 – Owners - Politicians for the European Strategy

The last group of politicians, Component 6, is associated with Politicians worried with managing the conflicts between the various users; actually they can be identified with “Proprietors”. Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture and they recognize that there are market failures that is necessary to correct (Statements 21,26) and, the other politicians they are against the allocation of marine property rights per island (Statement 22).

Agree Less			Relatively indifferent			Agree More		
-4	-3	-2	-1	0	1	2	3	4
				3				
				12				
			14	24	9			
			8	19	11			
		6	13	17	16	27		
	28	23	1	33	18	5	26	
	32	29	25	20	36	7	21	
22	30	15	31	2	10	34	4	35

Figure 8: Component 6 – Proprietors - Politicians for Conflict Management

Component 7 is an interesting one. On the one hand it cannot be allocated to any of the property rights groups define a priori in Table 2. It defends consistency “The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas” (Statement 4), truth “Europe seems to advocate regional differences on paper but not in practice” (Statemen 19), fairness “Vessels large and sophisticated cause great havoc on marine resources” (Statement 27) and ethics “It is important to establish ethical principles for negotiation between interests” (Statement 25).

Agree Less			Relatively indifferent			Agree More		
-4	-3	-2	-1	0	1	2	3	4
				22				
				29				
			26	15	18			
			14	7	21			
		23	34	32	3	12		
	5	30	10	24	20	16	27	
	35	2	6	13	36	11	19	
9	1	31	8	17	33	28	25	4

Figure 9: Component 7 - Ethic Attitude

5. Conclusion

Using the analytical framework based on the typology of property rights proposed by (Schlager and Ostrom, 1992) and the Q Methodology initiated by (Stephenson, 1953) we were able to interpret the attitudes Horta stakeholders on the property rights changes implicit in the European Marine Strategy. We conclude that there are windows of opportunity (Nijkamp, 2009) for innovation and development in remote areas if innovative entrepreneurs "Entrants", associated with "Data Collectors" and politicians for innovation "Claimants" can change the institutional status quo. Along the institutional and technological innovation processes, old "Users", "Proprietors" and "Owners" are challenged to redefine property rights over natural resources, pressured by the uses allowed by new technologies. All these changes on the allocation of rents can influence the path out of regional underdevelopment; either to regional development, exploitation or dependency (see Figure 1). Creativity should be not only related to technological or cultural issues but mainly to institutional adaptations.

ANNEX 1

Q Sort on Marine Strategy.

1) The Q Sort Method aims to structure the discourse of development agents in a community on a specific topic.

2) From documents and interviews we identified 36 phrases

	Phrases
1	Marine protected areas are an important step towards fulfilling its commitments on Sustainable Development and the Convention on Biological Diversity.
2	With an ecosystem approach to management of human activities, priority should be given to maintaining good environmental status of the marine environment in Europe
3	Coastal waters, the seabed and subsoil are an integral part of the marine environment and should be covered by the European Marine Strategy.
4	The Marine Strategy should be consistent with the Convention on Biological Diversity to protect marine biodiversity and creating marine protected areas
5	There is a flaw in top governance that ignores the knowledge of fishing communities at local level
6	The activities that depend on the sea as fishing and tourism suffer the degradation of ecosystems caused by competition over resources.
7	Human activity at sea and in coastal areas is essential to economic stability
8	Increasing levels of maritime traffic have big impacts on the marine environment
9	The waste from land and boats generate increasing problems.
10	Fisheries and other human activities affecting the populations of fish and seafood trade should not catch more than the maximum sustainable catch.
11	The extensive and semi extensive aquaculture can help reduce the pressure on the marine environment and generate significant economic benefits
12	You need more and better communication so that the fish of good quality can be purchased
13	The costs of fishing tourism are rampant especially those associated with insurance and safety equipment
14	Beautiful things is when we go in midsummer, in a motor boat, full of fish
15	If we were strong together with our government we would not be discussing the 200 miles but a lower area of 100 miles
16	Pressure on the Azores EEZ is growing especially by boats from Spain, France and Mainland Portugal
17	When a fisherman sees a foreign boat fishing illegally and denounces it, it is too far away to do something.
18	The power of money, the electoral power and influence of large companies reduce the prospects of small fisheries leading Europe to defend roach fishing instead of sustainable fisheries.
19	Europe seems to advocate regional differences on paper but not in practice
20	The management system has limitations and the total tradable catch quota system is a big threat to the fishing communities especially the small ones of the Azores.
21	The fish parallels markets are relevant and may increase with the crisis
22	The stock management should be made on each island and not at regional level so that the fisherman of one island should not fish in the sea of another island.
23	Monitoring is typically associated with environmental indicators but it is also important to define economic and social indicators and the

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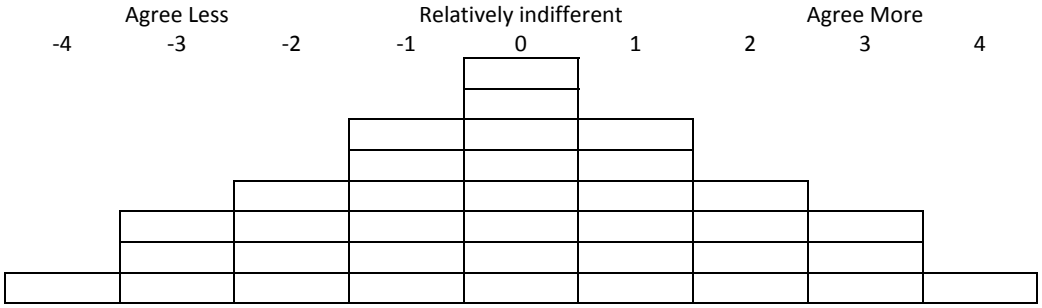
	relationship of cause and effect between them
24	It is essential to strengthen communication between local management and management at the European level
25	It is important to establish ethical principles for negotiation between interests
26	There is a flaw in the evaluation of the impact of recreational fishing
27	Vessels large and sophisticated cause great havoc on marine resources
28	Without boats, quotas and property rights artisanal fishing will die together with their communities
29	The inclusion of themes of sea and fisheries on formal education would value fishing communities on each island.
30	Training should be tailored to the needs of every fisherman
31	Export of specimens to zoos and ocean parks increase the value of biodiversity and favors innovation and development
32	All whaling heritage deserves to be restored and preserved
33	Marine Strategy should provide for innovative activities that promote the sustainable use of marine resources
34	The value of the sea is associated with having a good adjustment between conflicting uses of marine resources
35	Innovation is the result of the availability of a resource. The whale watching resulted began rooted in a whaling culture
36	The expansion of the EEZ to 350 miles is fundamental to the sustainable development of communities Azorean

3) Using the numbers of the phrases, rank them from the right to the left in the pyramid below



4) Identification

Gender		Age		Residence		Education		Occupation		Sector		Aim	
Masculine		-30		Faial		Other		Entrepreneur		Fisheries		Socio Economic	
Feminine		30-45		Azores		Lic		Public Service		Tourism		Socio Environmental	
		45-		Other		PhD		Employee		Other		Economic Environmental	

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Session 4 - Policies implemented in resilient territories

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REGIONAL INNOVATION STRATEGY OF THE SOUTH MORAVIAN REGION AS LOCAL SELF GOVERNMENT ENTITY AND ECONOMIC INFLUENCE OF SMALL AND MEDIUM SIZE ENTERPRISES IN THIS STRATEGY

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ABSTRACT: This paper deals with the development of research and innovation strategies (RIS3) instruments, innovation and creativity in the South Moravian Region. This region is placed in the Czech Republic and has specific regional problems. RIS3 instruments are increasingly heralded as an innovative policy tool for remedying the lack of dynamism in traditional public politics. This article synthesizes the opportunities and challenges encountered in the context of realization of RIS3 instruments and identifies critical successful factors and/or policy requirements for successful development of the South Moravian Region. This case study assesses a recent situation and brings options for improving the effectiveness of RIS3 instruments. Small and medium-size entrepreneurship is the most important sector of the South Moravian Regional economy. The role of the SMEs in relation to RIS3 instruments is also involved in this article.

Keywords: innovation and creativity, regional development, regional economy, RIS3, South Moravian Region, Small and Medium Size Enterprises

Goals and methodology

The author analyses the application of Regional Innovation Strategy in the South-Moravia Region and focusing of this strategy. The main projects and outputs of RIS strategy are analysed. Based on the previous analysis will be an evaluation of the effectiveness of projects and involvement of small and medium-sized enterprises in the example of a specific business challenges and opportunities. The result will be a conclusion of conditions which should be met to get. It should be pointed out on RIS3 instrument and related to the Regional Innovation Strategy.

Introduction to the national regional innovation strategy

The transformation of the Czech Republic from a centrally planned socialist republic to a market economy after 1989 began to show that the Czech economy with the focus on traditional industries, e.g. engineering, footwear and other industries is not sufficiently strong for the new open market. In the context of finding solutions to face to the new challenges of increasing European and global competition, it was clear that outside of the traditional industries, which were mostly somewhat depressed, the Czech Republic had to develop innovative and specialized industries that represent added value. The government of the Czech Republic this fully accepted in the Government Resolution No 714 of 27 September 2011, which is not a law, but the government's decision. Government approved a national innovation strategy, Czech Republic (RIS). Its conceptual basis and objectives were used, among others updated National Research, Development and Innovation for the years 2009-2015. The main objective is to strengthen to the Regional Innovation Strategy on Importance of innovation and the use of high technology as a source of competitiveness of the country and increase the contribution to the long-term economic growth, the creation of quality jobs and develop the quality of life in the Czech Republic. National Innovation Strategy of the Czech Republic has a global goal and strategic objective. Based on the recommendations of the European Union's innovation strategy document, to support Member States in innovation activities based on knowledge, excellent research, quality education and training of professionals, but also on innovation of activities carried out by the industry. Therefore, the RIS is divided into four main parts dealing with the excellent research, cooperation between business and research sector in the transfer of knowledge, innovative business support where people are bearers of new ideas and catalysts for change. Specific actions on priority axes RIS are further elaborated in the project plans within each pillar strategy of international

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competitiveness. Conceptual bases and objectives of the National Innovation Strategy of the Czech Republic will be used for updating the National Research, Development and Innovation Czech Republic for 2009 - 2015.

Characteristics of south Moravia region

The Regional Innovation Strategy based of the fact that the Czech Republic is divided into 8 NUTS 2 regions. South Moravia Region is one of them and has some the specifics.[37] Below we describe the specifics of the region of South Moravia, which makes it suitable for the implementation of certain policies within the national regional state strategy[38] :

- This region is bordering with the Slovak Republic and with the Austrian province of Lower Austria (Niederösterreich).
- The region's 673 municipalities, of which 21 municipalities with the extended powers, 48 municipalities have city status.[39] In addition, there is a military training area (Brezina).[40]
- The capital of the region is the city Brno, which is the second largest city in the Czech Republic and its significance extends beyond the region - it is the seat of the Constitutional Court and the venue for major events and European importance.[41]
- Science and education: In Brno, the number of public universities - the Academy of Performing Arts , Masaryk University , Mendel University in Brno , University of Defence, Veterinary and Pharmaceutical University Brno University of Technology . Central city of this region is the City of Brno, the second largest seat in the Czech Republic. Brno-city with over 368.000 inhabitants is located in the central part of the South Moravian Region and therefore on the border of Central and South Moravia, bordering practically only with the region Brno-countryside which surrounds Brno as a big ring.
- Concerning industry the most important role in the economy has engineering industry.[42]
- What concerning traffic the county town of Brno is an important railway and road junctions.[43]

Discussion, conclusions and outputs

The author within article on the following objectives and below shows the results for the individual objectives.

[37] The Region has more than 1 mil. inhabitants. South Moravian Region is higher territorial self-governing unit whose territory consists of 7 districts in central part of the land of South Moravia, the remaining 7 districts lie in 3 neighboring autonomous sub-regions.

[38] Above mentioned information are generally known and folows from below mentioned sources and are avaiable on Bno City (2013) and Sothmoravian Region (2013).

[39] The proportion of urban population is about 63.5 % of the total population of the region.

[40] An area of 7,065 km2 (9 % of the territory of the Czech Republic) takes fourth place South Moravian Region and the number of 1,194,425 inhabitants (11% of the Czech Republic), third place in the Czech Republic.

[41] In southern Moravia was one of the centers of the Great Moravian Empire in the 8th and 9th century.

[42] The centre of the engineering industry is Brno (First Brno Engineering, Siemens, manufacture turbines, Zetor tractors). Another important area of engineering industry is Blansko (CKD Blansko, Metra), Kuřim (TOS Kuřim), Boskovice (Minerva, Novibra) or Břeclav (OTIS Escalators) . More than a century of tradition in the region has the electrical industry (Siemens Drasov, VUES , ZPA) . The food industry is deployed mainly in the south and east of the region (Brno, Znojmo, Breclav, Mikulov). These are mainly meat (emergency - Steinhauser), canning fruits and vegetables (Znojmia, Fruta) and sugar. In the region there are four large breweries (Starobrno, Černa Hora, Vyškov and Hostan) and many big manufacturers of wines (Znovin Znojmo, Vinium Pavlovice). Chemical and pharmaceutical industry in the region is concentrated mainly in Brno (Pliva, Lachema) Ivanovice na Hane (Bioveta) and Veverská Bítýška (Hartmann Rico). Concerning agriculture, south Moravia climate is one of the hottest in the Czech Republic. Agriculture is the most developed in the lowlands. The key importance is the cultivating of cereals: wheat, barley and maize. Vegetables: cucumbers, peppers and tomatoes. Fruit: peaches, apricots and most especially grapevine. Almost 60% of the county is agricultural land, of which 83 % is arable land. Over 96 % of the vineyards in the Czech Republic lay just south Moravia. There are a lot of widespread breeding pigs, poultry and domestic water treatment.

[43] Motorways and express roads is connected to Prague (Highway D1), Olomouc (Highway D1) and Slovak Bratislava (Highway D2), good communication is the nearby Vienna, Austria (R52 and E461). The important north-south line from the E461 motorway to Svitavy. Railways were Brno to Vienna was in 1839 and today is a major railway connection between Vienna, Prague and Bratislava. Brno is also an international Brno Airport (ICAO LKTB) with regular flights to London, Milan, Moscow, Rome, and Eindhoven and we do not forget the sports Medlanky airport (ICAO LKCM).

The author analyses the using of Regional Innovation Strategy in the South-Moravia Region and the directions and focusing of this strategy and he answers the question if Regional innovation strategy (RIS) for the Southern Moravian region leads to reduction of unemployment.

In this paper we report on ways how to support Innovation Strategy for the Southern Moravian Region. In the framework of Regional Innovation Strategy (RIS) the region is vest to try:

- attract top scientists to Brno.
- ensure financing for innovative companies.
- help research teams.
- support the talented students.
- initiate the international cooperation.

The RIS as a development plan for the Southern Moravian Region ensures:

• realize projects that increase the competitiveness of the entire region and reducing unemployment;
• support talented students and improve the quality of education in schools;
• help the innovative companies to grow and carry out their international projects;
• attract top scientists to the region, and help research teams;
• mediate scientific centres of negotiations with companies.

The structure, relationships and the nature of the South Moravian region follows that in the RIS is join together region, city, universities (Masaryk, Mendel Universities), and other partners from local companies. Subject joined in this network (cluster[44]) create the project of Brno Business Navigator[45] which contains profiles of the most attractive and the fastest-growing innovative companies in the field of:

• mechanical engineering;
• ICT;
• life sciences;
• electrical engineering;
• environmental technologies;
• and interdisciplinary areas.

Important is also the cooperation with foreign partners and some of these partnerships are with Austrian and Slovak Universities. The below listed centres represent strategic research infrastructure investments of almost 600 million EUR from Structural Funds (Research and Development for Innovations Operational Program of the Ministry of Education, Youth and Sports). This idea is good and it continues on historical tradition of regions (Bergström, J., N. Dahlström, R. Van Winsen, M. Lützhöft, S. Dekker and J. Nyce**,** 2012). Next step based in the RIS are Centres of Excellence. The analysis of regional innovation strategies shows the focus on promoting entrepreneurship in information technology, medicine, of biological and agricultural sciences. It is obvious that without financing from EC funds and the cooperation of the State, regional authorities and universities, RIS could not function. In this institutionalization was the creation of regional innovation centre for the Region of South Moravia, which provides information and other support for the involvement of entrepreneurs in Regional Innovation Strategies in the above mentioned fields. The first step in the objectives of RIS was thus made and the partial sum, it established an institutional basis and ties and other necessary conditions to be administered in the above areas of specific projects to benefit RIS strategy.

Second outputs of this article concerns with the main projects and outputs realized in the framework of RIS strategy. Based on the above analysis will be an evaluation of the effectiveness of projects and involvement of small and medium-sized enterprises on the example of a specific

[44] Definition and typologyze of some cluster see more in Elola, A., Parrilli, M.D., Rabekkoti, R. (2013).
[45] See Brno Business Navigator (2013) - website of Brno cluster..

business challenges and opportunities and relation RIS3 instrument to the Regional Innovation Strategy.

One of the objectives of the article is to analyse the establishment of Centres of Excellence set up under the Regional Innovation Strategy. Below are Centres of Excellence created in the region focused on innovative approaches and their areas of interest (Švarcová, J.; Gabrhel, V., 2012): [46]

- Central European Institute of Technology (CEITEC) - Advanced Nanotechnologies and Micro technologies, Advanced Materials, Structural Biology, Genomics and Proteomics of Plant Systems, Molecular Medicine, Brain and Mind Research, Molecular Veterinary Medicine
- Global Change Research Centre (Czech Globe) - Climate Analysis and Modelling, Ecosystems Analysis, Studies of Global Climate Change Impact and Physiological Analyses, Innovation and Mitigation Techniques
- International Clinical Research Centre (FNUSA-ICRC) - Early Detection and Advanced Treatment of Cardiovascular Diseases , Early Detection and Advanced Treatment of Neurovascular Diseases, Joint Multidisciplinary Platform for Experimental Medicine and Biotechnology
- IT4Innovations - Multimedia Data Processing and Analysis, Secure and Reliable Architectures, Networks and Protocols

Regional R&D Centres

- Advanced Materials, Structures and Technologies (AdMaS) - Advanced Building Materials, Advanced Constructions and Technologies
- Application Laboratories of Micro technologies and Nanotechnologies (ALISI) - Applied Diagnostic Methods, Advanced Technologies
- Centre for Advanced Microbiology and Immunology in Veterinary Medicine (Admire Vet) - Veterinary Epidemiology and Diagnostics, Vaccines and Prevention
- Centre for Nanotechnology and Low Plasma Surface Treatment (CEPLANT) - Plasma Resources and In-line Plasma Treatments
- Centre for Research and Utilization of Renewable Energy (CVVOZE) Electromechanical Energy Conversion, Chemical and Photovoltaic Energy Resources, Energy Conversion and Utilization in Ecological Energetic Resources
- Material Research Centre - Inorganic Materials, Transport Systems and Sensors
- New Technologies for Mechanical Engineering (NETME) - Power, Processes and Environmental Engineering, Aircraft and Automotive Technology, Mechatronics, Virtual Machine Design and Testing, Advanced Metal Materials
- Regional Centre for Applied Molecular Oncology (RECAMO) - Oncologic Research
- Research Centre for Toxic Compounds in the Environment (CETOCOEN) - Tools for Monitoring of Toxic Chemicals Distribution in the Environment, Processes Affecting the Fate of Toxic Chemicals in the Environment, Development of Biosensors and Biocatalysts, Toxic Impact of Toxic Chemicals and Natural Toxins on Living Organisms, Environment Risks, Models and Information Systems
- Sencor, Information and Communication Systems (SIX) - Microwave Technologies, Wireless Technologies, Converged Systems, Multimedia Systems, Sensor Systems
- Transport Research Centre (CDV) - Deep Analysis of Traffic Accidents, Humane Synergy in Transport, Traffic Safety, Transport Infrastructure, Transport and the Environment

[46] These projects and information about it are available on Brno City, 2013, Southmoravian Region, 2013 and Brno Business Navigator, 2013.

International Research and Development Projects

An Integral part of the Research and Innovation Strategies for Smart Specialization are international projects of the research being carried out by the research institutes and companies from the region. We can point out on these successful projects. The RAQUEL project aims to unite the forces of EU expertise in computer science, physics and mathematics to undertake a comprehensive study of randomness and quantum information. The aim of ICRC-ERA-HUMANBRIDGE project is to develop stronger ties between International Clinical Centre and the key European players from both academic institutions and industrial partners. Moreover, the project will enhance the RTD capacity and capability of the Centra, especially in the area of human potential, enhance its innovation potential and improve its visibility. FINESCE project will organize a series of field trials of Future Internet technologies in the energy sector. FINESCE builds on and extends the results of the FI-PPP FINSENY project to realize sustainable real time smart energy services. One of the partners is Czech branch of company Honeywell. The UnivSEM project, which is coordinated by an SME company Tescan, aims at development of Universal SEM as a multi-nano-analytical tool, by combination of unique set of analytical tools. Application of this multimodal tool is expected in many industrial quality controls and in R&D sectors (e.g. photovoltaic, plasmonics and cell-nanoparticle interaction). CRAFTERS project will produce a holistically designed ecosystem from application to silicon. This ecosystem will provide a tightly integrated multi-vendor solution along with a tool chain that complements existing standards. The goal is to reduce NRE software development by 30% between 2009 and 2013. The project involves an SME company CAMEA. The aim of CEDESA project is to upgrade the existing research capacity in aerodynamics and aircraft structures at the Institute of Aerospace Engineering at Brno University of Technology to the highest European level and create a Centre of Excellence for the Design of Efficient and Safe Aircraft. CEDESA has twinning partnerships with European Aeronautic Defence and Space Company Innovation Works, Swedish Defence Research Agency, Deutsches Zentrum für Luft- und Raumfahrt and Materials Engineering Research Laboratory Ltd. RECOMP project established methods, tools and platforms for enabling cost-efficient certification and re-certification of safety-critical systems and mixed-criticality systems, i.e. systems containing safety-critical and nonsafety-critical components.

There are many public contracts financing in relation to mentioned projects and activities and it is good for job creation (see in Jurčík, R., 2007).

The Regional Innovation Strategy and Small and Medium Size Enterprises (SME)

First, it should be noted that the economy of South-Moravia region is based on SME; from 1997 to 2013 its performance redouble. It is interesting involvement of SMEs companies and its portion on RIS Strategy. The importance of SME follows from Table 1.

Table 1: Portion of SMEs in the portion of total EC subsidies in the framework of RIS (South-Moravia Region) v %

Year	SMEs	Other companies	Public sector (incl. Universities)	Research and development institutions
2010	10,56	4,02	80,32	5,10
2011	12,38	4,11	78,21	5,30
2012	13,55	4,25	77,3	4,9

Source: Czech Statistical Office, Regional developed EC fund Jihovychod, Own Calculation

This table shows that the largest share of EU funds to obtain public sector. From the business environment obtain mainly the Small and Medium-Sized Enterprises. Within this table is always taken into account the principal beneficiary, which can cooperate with those of other sectors. Public sector (including universities) is therefore responsible for the creation of an institutional environment, human resources and implementation tools that will also help the private sector to the successful implementation of projects RIS and to improve the economic development of the region and also to reduce unemployment.

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In the Czech Republic is unemployment 8,01 %. In the South-Moravian Region is unemployment higher 8, 58 % – see in Palate, M. (2013). For reducing of unemployment were implemented these tools: [47]

- To support the traditional business because the most common field of business are these services: tax and legal advising, stylists, bakers, servicemen, restaurants, shop services, public transport. The capable and competent entrepreneurs have a better chance to earn more money than as an employee or in public administration. On the other hand the competition is high. These micro firms have less than 10 employees.
- Support innovation activities. It represents a trial to benefit from innovation and new technologies. The South Moravian city of Brno has the biggest concentration of tech universities in the Czech Republic. The main fields of interest are oncology diagnostics services and pharmaceutical software to gaming or hardware platforms, bioinformatics, microelectronics, IT services. The cluster is including four biggest Brno universities with cooperation's. From above mention results that Research and Development (R&D) and Research and Innovation Strategies for Smart Specialization (RIS3) profiles are grouped in six science fields Life Sciences, Chemistry and non-metal materials, Information Technologies, Electronics and instrumentation, Physic, metal materials and machinery. This is possible to realize through European subsidies and also form character of the city-Brno surroundings with developing services in the field of exhibitions, light industry and trade developed forestry and agriculture – from hilly north to south flat. The South Moravia has very strategic geographic position within Central Europe with excellent transport accessibility, including an international airport, modern, dynamic and fast growing Centre of Industry, Trade, Science, Information Technology, Research and Innovation with Business Incubators and Centres of Excellence in Science, a city of Universities with more than 86,000 students at 14 Universities and 3 University campuses.

These Centres should not be built without the State subsidies. Enormous twenty billion crowns from European funds will go into 2013 on the development of science and research in the South Moravian Region. The four largest universities in Brno created in cooperation with the city and the region unique consortium for support. Provide large scientific Moravia. From above mentioned analyses follows that without the cooperation of universities by RIS was not effective.

We hope that Research and Innovation Strategies for Smart Specialization (RIS3) will support labours places and RIS3 will contribute to economic development and job creation by reducing support from the EU[48] . Author summed up the abovementioned projects across all partners and concluded that each year nearly 20, 000 employees were involved into the RIS project solutions and alternative around EUR 1 billion is spent on the needs Centers Excellence and other RIS projects (e.g. in the form construction contracts, supplies, PC, office supplies, etc.), which creates more jobs. The Realization of all strategies in the framework of RIS leads to reduction of unemployment about 1 %. On other hand, this boundary is limited by lack of experts for realization functions projects.[49]

RIS support mostly start-up companies with smart ideas and business plan. The problems are that this is initiative of students or technical people not of business men. According to the author this is the reason why survives only one of four based start-up company (smart SMEs) for more than one year[50]. According to the opinion of author, it is better to establish companies based on the projects of business men, including experts and technicians (to the economic risks see Ochrana, F., 2010).

Small and medium size enterprises in the South-Moravia Region and issues associated with their development can be examined from various points of view (Tabas, J., Beranová, M., Vavřina, J., 2011). These aspects have to be synthetically linked, since we can state that individual factors are

[47] Exploring knowledge-transfer describes Pinto, H., Fernández-Esquinas, M. Exploring (2013).
[48] Necessity of innovation regional planning see indetail in Pinto, H., Guerreiro, J. (2010).
[49] To the problems with social capital see more in Parrilli, M.D. (2012).
[50] To social behaviour factors see Dundelová, J. (2011).

mutually interconnected. Development of small and medium size enterprises presumes investment in innovations and human resources development. The objective of the presented analysis was to divide the growth supporting factors from the point of their effects into endogenous and exogenous factors. Business development cannot be presumed for the entire structure of enterprises; mostly it concerns a mere one third of all the businesses, which we can refer to as entrepreneurial gazelles, that is to say enterprises aiming at growth right from the very beginning. We results that SME are involved into half projects realized in the framework the Research and Innovation Strategies for Smart Specialization. There are the main reasons to have capable and educated employee in SMEs companies.

The final outputs concerns to expected benefits of Regional Innovation Strategy.

Expectations arising from the implementation of regional innovation strategies and RIS3 arising from the table below

Table 2: Expectation from the realization of Regional Innovation Strategy

Sector	Expectations
Business (small and medium size enterprises)	New opportunities for the development of own business Higher added value More sophisticated labour market Available market information Affordable and quality consulting services More efficient networking - cluster structures Better access to other businesses Improving the quality of suppliers Better communication infrastructure A better environment for commercialization Culture change in technological entrepreneurship Knowledge of the strategic direction of the region Higher income from own business Strengthening competitiveness New opportunities for the development of own business Higher added value More sophisticated labour market Available market information Affordable and quality consulting services More efficient networking - cluster structures Better access to other businesses Improving the quality of suppliers Better communication infrastructure A better environment for commercialization Culture change in technological entrepreneurship Knowledge of the strategic direction of the region Higher income from own business Strengthening competitiveness
Public Administration	Competitiveness with other regions and regions Improving the development potential of SMEs in particular Increase the attractiveness of regions, municipalities Elimination of disparities in the region Economic growth with minimal impact on the environment The deployment and use of advanced technologies Improving the quality of life of residents Improving educational attainment of the population Positive impact on the structure of graduates GDP growth in the region Greater competition in the market
Educational Institutions	Support for comprehensive education and thinking? Improving information on educational opportunities Commercialization use of knowledge Participation in multilateral projects (clusters) The change in legislation

	The growth in prestige and professional reputation Available market information Availability and quality of outsourcing services More effective networking Better access to medium and large enterprises Defining the requirements for the degree programs Linking teaching and professional practice Support shorten the accreditation process Knowledge of the strategic direction of the region Culture change in technological entrepreneurship Higher income from own business Strengthening competitiveness
Research and Development	Culture change in technological entrepreneurship Better communication infrastructure More effective networking and promotion services More interested in service V + V Better availability of human resources A better environment for the commercialization and application of knowledge More interested in innovative companies in region The growth of its own activities and products offered The change in legislation The growth in prestige and professional reputation Available market information Availability and quality of counselling services Better access to medium and large enterprises Knowledge of the strategic direction of the region Higher income from own business Strengthening competitiveness

Source: The results of research, own work

Table no 2 summarizes the results of the survey with the key issue: What can I expect from the results of the Regional Innovation Strategy? The questionnaire survey was addressed in writing or orally 30 small and medium-sized enterprises operating in the industry, six universities, three scientific research institutions and representatives of the City of Brno and the South Moravian Region. Findings are presented in the table above.

Final comments

At the very conclusion can be stated as follows. To maintain the competitiveness of each region are necessary traditional sectors (services, industry and agriculture). For further development of the region, it is essential to be able to respond to new challenges and changes on a global scale. One of the strategies that contribute to this development is the Regional Innovation Strategy and RIS3 that uses and produces large clusters involving local government, businesses (especially SMEs) and the creative potential of universities and research centres. These relations of cooperation are supported by funds from the European Union and from local sources. Some factors play a greater role in the sub-group of regional innovation strategies, such as Small and Medium Size Enterprises and the Universities in the field Research and Innovation Strategies for Smart Specialization.

From the above analysis and research, however, arise in relation to the region innovation strategy risks in the future. One of them is the fact that it is largely funded from the European Union, which will be after 2014 significantly reduced.

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CCALPS, CREATIVE COMPANIES IN ALPINE SPACE: CREATIVITY AND CULTURE FOR THE TERRITORIAL INNOVATION

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ABSTRACT: CCAlps is a European project that promotes the support and the development of CCIs (Creative and Cultural Industries). It is financed by the Alpine Space Programme of the European Union and it is aimed at developing the competitiveness and the attractiveness of the Alpine Space Area, by strengthening the relations between urban and peripheral areas. Lombardy Region is the lead partner of the project that involves a network of nine institutions from six European partner countries: Italy, France, Germany, Austria, Slovenia and Switzerland. The main objective of the project, starting in October 2011 and ending in July 2014, is to create a European network allowing CCIs to give their highest potential, contributing to increase the competitiveness of the Alpine Space.
In particular, the aims of the project are to:

- Promote creativity and innovation as strategic factors for the development of the production activities and facilitate the meeting between CCIs and other micro, small and medium enterprises (MSME), universities and research centers.
- Create a transnational network among HUBs (incubators, services centers and co-working centers) that are present in the territories of the partners' Regions, enterprises and other stakeholders.
- Increase the awareness of public institutions about the role of CCIs

In this paper we will present for the first time the actions and the results reached since now with special attention to Lombardy Region territory.
Keywords: Alpine Space, CCIs, design, hub, territorial development

1. Introduction

In the next pages we will highlight the actions which have been conducted within the framework of a European project called CCAlps (Creative Companies in Alpine Space). In order to spread light on this first year of work, we discuss the theoretical premises which is at the basis of the research project. In particular, in this first section, we divided the theoretical approach to our work in three main points of interest which will be quickly discussed. These three main areas which are central for CCAlps research actions are: creative and cultural industries, policies for the territorial development, and networking strategies. Then in the following sections we will go deepen on theories and activities which characterized the approach developed in order to reach the main goals of the project:

1. Promote creativity and innovation as strategic factors for the development of the production activities and facilitate the meeting between CCIs and other micro, small and medium enterprises (MSME), universities and research centers.
2. Create a transnational network among HUBs (incubators, services centers and co-working centers) that are present in the territories of the partners' Regions, enterprises and other stakeholders.

1.1 Creative and Cultural Industries

The definition of CCIs could be controversial, more or less inclusive. A part from the several definitions that have been formulated, we can affirm that these definitions include both enterprises and self-employed persons who work for the "production, dissemination and intermediation of artistic and cultural products and services" (von Streit and Lange, 2013: pag.295). In addition to that, one of the main characteristics that creative and cultural working sectors have in common is the project-based organization, that means a focus on the development of projects in short periods of

time. This is a very specific characteristic of CCIs which must have high performances in short time with high risks to failure (von Streit and Lange, 2013; Grabher, 2004).

We are going now to highlight some concepts, related to the definition of Cultural and Creative Industries, which we consider particularly useful and interesting for the theoretical approach of our project.

- Cultural Commodity Production by Alan Scott (2004). He distinguished between two categories in which cultural-product industries can be divided according to their sectors. The first category is service outputs. It contains, for example, motion, pictures, music, print, media and museums. The second category is constituted by manufactured products. This second group is considered the one which more influence in the construction of identity, self-affirmation and social display. In any case, what really unifies those sectors are the importance of the symbolic meaning for both the categories.
- Creative Service Providers and Contents Producers by NESTA (2006). The model developed by NESTA uses the conditions of profit to categorize the creative sectors. This model helps to identify those typologies which have the greatest impact on economic growth. The model separates providers from producers. From one side there are creative service and experience providers, from the other side contents producers and producers of originals. NESTA report considers creative service providers and contents producers as those which have the greatest impact on the economic growth of a country.
- Concentric Circle Model by David Throsby (2001) used also by KEA (2006). This framework distinguishes between:
    - Core arts areas: performing arts, visual arts, cultural and architectural heritage and, literature.
    - Cultural industries: film, DVD and video, television and radio, video games, new media, music, books and press.
    - Creative industries: industries which use culture as an input, including architecture, advertising, design and fashion.

Eccentrically, from a core creative arts, such as performing arts, the other core creative industries, wider cultural industries and related industries will developed radially.

As we will see later, this last definition has been taken into account in the development of the theoretical approach of the project we are going to talk about. Indeed, one of the central point of interest of CCAlps project is related to the collaboration between different expertise and sectors, looking at these core sectors as pillars for the development of the other creative and not-creative sectors.

1.2 Policies for the territorial development

In the previous paragraph we highlighted what is the main focus of our research project: Cultural and Creative Industries. Now we want to discuss the level of intervention which CCAlps project takes into consideration.

Regions are the main actors and areas of action of CCAlps projects. The reasons why the level of action is the regional one are several but we can sum them in mainly three motivations:

1. Notwithstanding the fact that cities are still competing one-another the municipal level is not more sufficient and representative of the competition in advanced economies (Bontje and Kepsu, 2013);
2. Municipal borders do not define the edge of development of creative industries and activities. Indeed, especially looking at bigger companies, they usually are located in the suburbs or outside the main cities. This is mainly, but not only, due to the availability of lower cost-bigger spaces.
3. Another reason, in some way connected, even if different, with the previous one is the attractiveness of cities (Lewis, Donald, 2010). Differently to what Richard Florida (2002) highlighted, it seems that cities are loosing their attractiveness. This is true not for all the creative

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workers but more and more people prefer to move to places where there is a better quality of life preferring this one to better working opportunities and connections. As example we can mention, for the Lombardy Region territory the cases of *idkid* which is located at San Fermo della Battaglia, at 40 km from Milan and close to Como, and *Urbano Creativo* located in Como.

Therefore regional planning is one of the starting point from which the research takes places[51]. In some way, we can talk about place-making but in a very wide sense. That place is not only identified with big cities, such as Milan, but as we discussed above with the wider city-region and the region as well. "Place-making is about measures undertaken by local governments and other interested actors to invest place with specific cultural characteristics" (Kovàcs and Musterd, 2013: pag. 100). Investing and fostering a place-making approach results in the development of a sense of place (Foote and Azaryahu, 2009).

We are not going to discuss the development of a sense of place in this context, but in the following sections we will often make reference to theories which have to do with place-making activities, which have been conducted as pilot actions of CCAlps projects, supported by several theories which take into consideration places (such as for example, Path dependence and Field-configuring events).

1.3 Networking strategies

Networking is one of the new buzzword together with creativity, innovation, etc.

This concept have a double level of interpretation in our study. One has to do with regions itselves and the other one with people, in particular creative workers.

Charles Landry (2000), talking about *Networking dynamics*, identifies two different and important dynamics of networking: within the city and internationally. This is a key factor for CCAlps project, since the levels of action are both developed within the regions and among different regions, as we will see.

The other point of view has to do with people. Indeed, especially in creative and cultural sectors, networking is one of the most important activities which have to be accomplished. Networking is a crucial skill to be successful in a local market. When we talk of network we refer to the so-called "social" network (but not in the digital meaning of this term). With reference to the work by Granovetter (1973), we can say that the social networks influence the economic performance for three main reasons (Granovetter, 2005: 33):

1. social networks affect the flow and the quality of information
2. social networks are an important source of reward and punishment, since these are often magnified in their impact when coming from others personally known.
3. social networks favor the development of trust.

Therefore we can say that network is a facilitated open relationship with many public or private subjects and this constitute one of the central point of the activities conducted within CCAlps research.

2. CCAlps Project

2.1 Context: Alpine Space and Creativity

The Alpine Space is one of the most diverse regions at the heart of the European Union. It is extended on a surface 390 000 km², including in its territory some of the most attractive European metropolitan cities. Indeed, it counts about 70 million inhabitants who work and live in its territory. Diversity takes shape also from the different European cultures and languages (German, Latin and Slavic) which take place in it. Therefore, the Alpine Space is an important territory suitable for living, working and recreating. However it has been facing for years deep economic and social changes,

[51] See for example Ebenezer Howard study about garden cities (1898), an example of which is Cusano Milanino, in the Milanese province and Patrick Geddes work (1915) which conceptualized the birth of the so-called *hinterlands*.

which bring consequences to face with (low internal innovation capacities of SMEs, urban sprawl, depopulation, etc.)

In this wide framework the Alpine Space Programme takes place. The main objective of the program is that of favor a socio-economic sustainable growth of the territory to increase the competitiveness of the Alpine regions, strengthening rural-urban relationships and the development of peripheral areas.

The Alpine Space Programme is the EU transnational cooperation programme for the Alps. Partners, which are Austria, France, Germany, Italy, Liechtenstein, Slovenia and Switzerland, work together to promote regional development in a sustainable way. The programme is developed according to three main priorities:

1. Competitiveness and attractiveness
2. Accessibility and connectivity
3. Environment and risk prevention

CCAlps, Creative Companies in Alpine Space, is financed within the first priority and is based on the identification of sustainability and creativity as modern levers for sustainable growth. Starting from Europe 2020 and Creative Industries Green Paper recommendations, cultural and creative industries (CCIs), are seen as playing a central role for growth and competitiveness, because of their capacity to improve innovation, employment and interconnection in industrial sectors.

Lombardy Region is an Italian Region located in the Alpine Space area. With its 9,700,000 inhabitants and a GDP of about €318.4 billion, Lombardy is one of the most populous and richest region in Italy and in Europe.

CCIs play a key role in Lombardy. According to Excelsior research (Unioncamere, 2012; Business&Gentlemen, 11th April 2013), notwithstanding the period of crisis CCIs seem to resist, since the number of workers in these sectors, from 2007 to 2011, increased, even if slightly (0,8% every year). CCIs show better performances than the other enterprises in general. Nowadays, there are about 289,000 people employed in four macro sectors:

1. Creative Industries: 135,600 workers, divided as follow:
    a. Architecture: 28.4%
    b. Adv: 15.9%
    c. Design: 25.3%
    d. Craftsmanship: 30.4%
2. Cultural Industries: 135,000 workers, divided as follow:
    a. Film, Video, Radio-TV: 10.2%
    b. Videogames and Software: 39.6%
    c. Music: 1,2%
    d. Books and Publishing: 49%
3. Heritage: 3,200 workers
4. Performing Arts: 14,700 workers

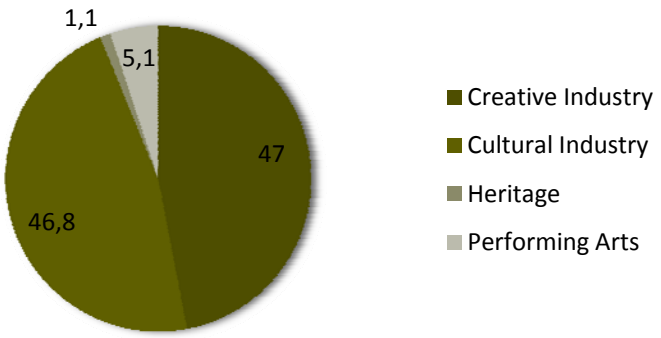

Figure 2: CCIs workers distribution in Lombardy

Looking at the revenues and the economic impact of these industries, Creative Industries generate an income of 7,651billions of euros, Cultural Industries 9.995 billions, Heritage 183,1 billions, Performing Arts 842 billions.

The 84,106 enterprises are distributed as follow on the regional territory:

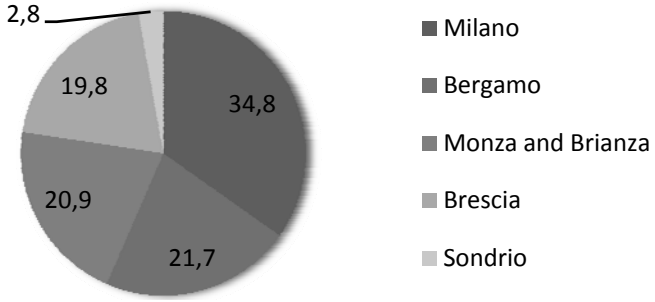

Figure 3: CCIs distribution in Lombardy Provinces

Looking at the European situation, Lombardy, and in particular Milan, is ranked at the third place in the list of Europe top regions for CCIs employment clusters.

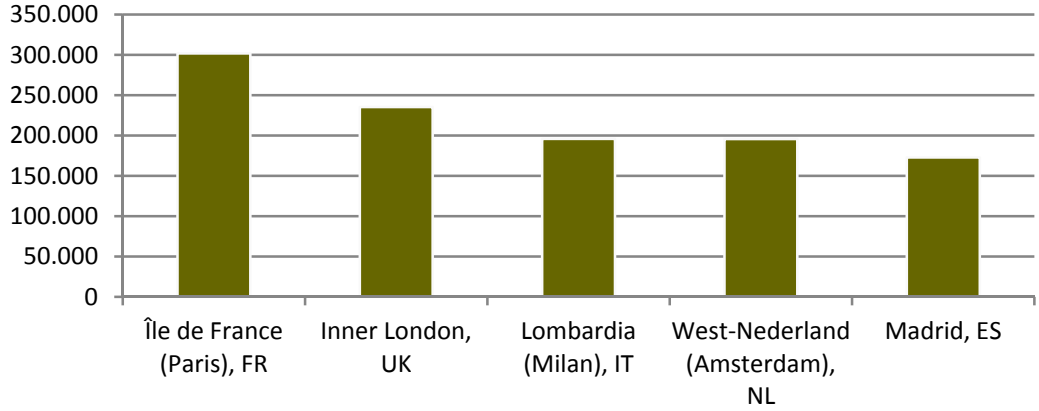

Figure 4: Europe top regions for CCIs employment clusters (Power, Nielsén, 2010)

2.2 CCAlps Project: focus and main goals

The production systems in Alpine Space territory are characterized by areas of excellence and important clusters. There is an increasing number of SMEs aiming at addressing a sustainable change by renewing their approach to innovation, using knowledge and creativity as strategic levers. These

structural weaknesses slow down R&D and market innovation in all regions. The growth of new creative companies could help to develop networking skills and pathways to new opportunities. Collaboration can promote innovation through development of new product/service systems and by focusing on creativity, sustainability, and enhancement of R&D and innovation processes. CCAlps Project has as a main objective that of enhancing the attractiveness and competitiveness of the alpine region. CCAlps involves 9 partners from six different alpine regions.

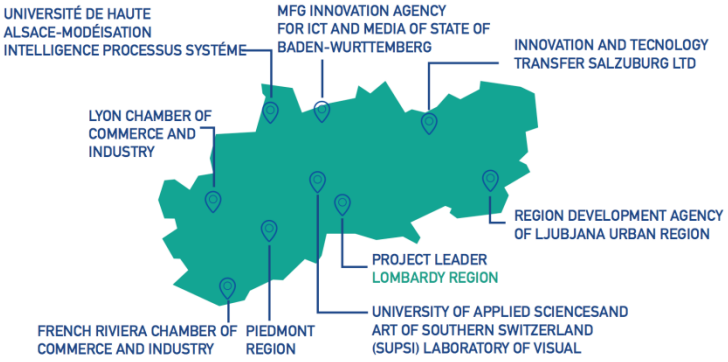

Figure 5: CCAlps partners

CCAlps Project is developed on three main goals:

1. Promote creativity and innovation as strategic factors for the development of the production activities and facilitate the meeting between CCIs and other micro, small and medium enterprises (MSME), universities and research centers.
2. Create a transnational network among HUBs (incubators, services centers and co-working centers) that are present in the territories of the partners' Regions, enterprises and other stakeholders.
3. Increase the awareness of public institutions about the role of CCIs.

The following sections will be structured according to the three main goals identified and the research actions already implemented to reach them. In these three sections partial results, obtained since now, will be reported. Finally we will draw a general picture of the success of the actions implemented and of next steps which will be conducted onward.

3. Promote creativity and innovation as strategic factors: THE CREATIVE CAMP

Looking at CCAlps first main goal *"Promote creativity and innovation as strategic factors for the development of the production activities and facilitate the meeting between CCIs and other micro, small and medium enterprises (MSME), universities and research centers"* it seems particularly relevant in order to support the choice of pilot actions to develop to refer at two main theoretical concept.

The importance of networks has also to do with the development of a sort of sense of place through the activation of place-making strategies.

After having discussed these theoretical approach we will see how it was practically implemented within CCAlps research thanks to the development of a pilot action called *Creative Camp.*

3.1 Personal Networks and Field-Configuring Events

As we already discussed previously, the importance of places in facilitating and developing relational aspects and networks is particularly evident when territories express their capacity to attract whenever some characteristics are satisfied. One of these characteristics is represented by personal networks (Musterd, Kovàcs, 2013). In this perspective, it seems that creative and cultural industries

show a need of community. At the macro-urban level, this need is expressed by the creation of creative quarters, technological parks, at the micro-level, through the settlement of co-working forms and multi-office condos (we will deepen this aspect in the following section, talking about HUBs). Here we want to stay focused on the not-stable forms which the need of community takes shape in (Sedini, 2011). A Field-Configuring Event (FCE), for example, is identified as a temporary network (Lampel, Meyer, 2008) where are collected individuals, groups, and organizations. Initially, an FCE can be sporadic, but then it can become more periodic and structured. The importance of FCEs is linked to the possibilities that fairs, conferences and contests have in favoring both competition and collaboration in a particular economic sector. The aim of hosting an FCE in one city is that of improving a business sector, such as the design one (Sedini, 2011). Initiatives such as fairs and events contribute not only to the creation of network of firms but also to the development of networks of people. As we mentioned above, the role of personal and professional networks seems to be very relevant for creative and cultural industries because of their specific characteristics: flexibility, small dimensions, constant in change (Kovàcs and Musterd, 2013).

In this section we present the first pilot project conducted within CCAlps project: the Creative Camp. This event has as main goal that of create network among creative workers, enterprises, social institutions and stakeholders. However a side but important consequence is the development of personal networks together with the professional ones. In addition to that Creative Camps could represent events able to give shape to CCIs sectors, together with a complex system of events and policies, in case they stabilize forward in time.

3.2 What is a Creative Camp?

In order to answer to the first main goal of CCAlps Project, the Creative Camp model was developed within the Work Package 7. Each partner region had to host on its territory a Creative Camp. The objective was to develop networking between cultural and creative industries, micro, small and medium enterprises, in traditional and advanced industries, local institutions, universities and research centers. A Creative Camp can be seen as an advanced workshop, which has a very intensive initial phase of concept generation followed by a second longest phase of idea development. Creative Camps include many activities to develop new products and services, enhancing the growth of the local productive system.

In a period length of six months, in 2013, all the partners (a part from the Université de Haute-Alsace) had to organize and held their own Creative Camp. A general framework was supplied to the partners, which however could plan and manage their camps on the topics more suitable for their regions and more in line with their competences.

As we said, Creative Camps where structured in different ways, however all of them must have to follow these steps:

1° a call for ideas
2° the selection of the best ideas at least two days of intensive workshop for the concept development
3° a phase of mentoring and coaching
4° at least a final event of dissemination

We are not going to go deep in the results of each Creative Camp in this context, but we want to stress the element of internationalization which all the partners tried to put in place for this pilot action of CCAlps. Indeed, for each Creative Camp all the partners launched a call in order to select participants who were willing to participate to this experience abroad. For example, Lombardy Region team selected at least one participant for each “foreign” Creative Camp. In this way we could experience some elements of internalization and make a better test for each pilot actions.

In the next section we are going to focus on the experience of Lombardy Region Creative Camp.

3.3 Lombardy Region Creative Camp: the process

First of all it is important to say that the idea of Lombardy Creative Camp starts from two main scenarios:

1. Expo 2015, which will actually be located in Lombardy. Expo shall put sustainability, responsable use of resources, hospitality and enhancement of local cultures at the centre of many events. In this context, Milan shall be at the centre of these events, but all the Lombard system shall find an harmonic relation with the town through new services, events, models of hospitality, and new forms of mobility, able to make this opportunity the starting point of a regional change path.
2. Europe 2020, which bases its strategy on mainly five targets concerning:
    a. Employment: 75% of the 20 - 64 year-olds to be employed;
    b. R&D: 3% of EU's GDP to be invested in R&D;
    c. Climate Change and Energy Sustainability: greenhouse gas emissions 20% lower than 1990; achieving 20% of energy from renewables; 20% increase in energy efficiency;
    d. Education: reducing the rated of early school leaving below 10%; at least 40% of 30-34 year-olds completing third level education;
    e. Fighting Poverty and Social Exclusion: at least 20 million fewer people in or at risk of poverty and social exclusion.

Starting from this point of reference a brief for each line of interest was developed, experts and locations were identified:

Table 2: Lombardy Region Creative Camps

Topic	Brief	Location	Experts
Line 1.1-Multimedia	Enhancing the territory cultural and touristic appeal and innovating the promotion and fruition modalities of Lombardy local resources, traditions, landscape and typical food and wine.	Valcamonica at Città della Cultura of Capo di Ponte	Alessandro Masterdotti (Dotdotdot). Assistants: Marina Parente and Giovanna Vitale
Line 1.2-Multimedia	Developing new products/services to promote the intangible cultural heritage and interculture	Vigevano, LeoHub	Bruce Sterling. Assistants: Francesca Piredda and Elisa Bertolotti
Line 2-Fashion	Competitiveness of the 'Lombardy Fashion System" on an international scale: new strategies and services to promote textile in the clothing and furniture sector.	ComoNExT, Lomazzo	Luca Gafforio. Assistans: Giovanni Conti and Rossana Gaddi
Line 3-Service Design	New services ahead EXPO 2015: Promoting sustainability through new forms of hospitality, mobility, information and restaurant management	Bovisa Politecnico Campus, Milano	Luigi Ferrara. Assistants: Andrea Di Marco and Arianna Vignati

The Lombardy Region Creative Camp process was organized as follow:

1. Call for Ideas
2. Selection of 40 best "Idea4CreativeCamp"
3. Creative Night: the selected participants to the Creative Camp explained their ideas to entrepreneurs and stakeholders
4. Workshops start: discussion of the teams selected with the international experts
5. Intensive workshop: each expert conducted in an autonomous way his camp. All of them did revisions of the project, personas building activities, brainstorming, concept generation, re-definition of each project and final presentations
6. On line and off line design review: progress of the projects with the support of Politecnico experts
7. International final event 2013: Round tables and keenotes speaches with several experts and politicians, creative pitching and selection of the ideas which will have the opportunity to continue to be assisted in the developing of their ideas.

8. Design review and professional assistance to the project development: support by expert of the Politecnico of Milan to check the technical, economic feasibility and finalization of prototypes, tested services etc.
9. International final event 2014: presentation of Creative Camps results of all the countries partners

While we are writing (November 2013):

- Six ideas has been selected, we are at the stage of design review and professional assistance to the project development;
- We are designing the second edition of Creative Camp in all the country partners

4. Creation of a transnational network

The second goal of CCAlps Project is "*Create a transnational network among HUBs (incubators, services centers and co-working centers) that are present in the territories of the partners' Regions, enterprises and other stakeholders*". In the following paragraphs we will present as first the theories of reference for our applied research and then we will talk about the steps which are conducting to the establishment of the network of HUBs (the regional one first of all and then the international one). The theoretical framework we are using is referring to localization theories but also, as we saw above, networking theories.

4.1 Personal Networks and localization theories

The second aim of CCAlps Project is linked to the theories which have to do with localization. Places are a crucial factor for the innovation process. The first to take into consideration the relationship between economy and places was Alfred Marshall. He talked about the *industrial atmosphere* (1890). This concept was reactivated by the Italian scholar

Giacomo Becattini in the late '70s. He theorized that small and medium-sized enterprises specialized in the same industry were forming a district, that is a system in which not only competition but also cooperation took place (1979). The business economist Michael Porter (1990) theorized the competitive advantages of Nations, talking about the *cluster* concept.

In the definition of Scott (2006) the *creative field* has three main peculiarities:

1. there is a network of firms and workers which create an interactive agglomeration;
2. "it is constituted by infrastructural facilities and social overhead capital, as schools, universities, research establishments, design centers, and so on" (Scott, 2006: 8);
3. it expresses the "cultures, conventions, and institutions" (Scott, 2006: 8) which are characteristic of the agglomerated system of production and work.

The adoption of the clusterization approach in urban policies is dealing very much, as we have seen, with the facilitation of the interaction between potential and existing companies, that is networking. As we discussed previously, this "need of community" is visible at the macro-urban level (creative quarters, technological parks, districts, etc.) and at the micro-level (co-working spaces, multi-office condos). Incubators, co-working centres, creative platforms and hubs represent new ways to develop networks, cooperation, tacit and explicit knowledge. For example, an incubator is identified as a company facilitator providing a series of resources supporting a business, start up especially. Co-working instead is a "shared working environment where the basic infrastructure is provided" (von Streit and Lange, 2013: pag. 305) and it usually is an access point to the local creative milieu and networks (Lange, 2011).

Therefore, spatial proximity is a factor helping the transmission of knowledge, most of all the no-codify and informal one.

In the following paragraphs we will go through both the levels starting from a micro-level dimension arrive till a transnational level, connecting all the partner regions analyzing the creation of the network of HUBs.

4.2 HUB definition and its role of networkers

The second main goal listed above is *"Create a transnational network among HUBs that are present in the territories of the partners' Regions, enterprises and other stakeholders".* The development of the super-regional network of HUBs made necessary a first reflection upon the concept of hub, which has been resolved giving an operational definition, useful for mapping the hubs, already existing in the territory falling within the competence of each partners. It is needed a theoretical definition of hub, allowing to translate the theoretical assumptions in project elements to start up the hubs or the network of hubs considered in WP 6. After the mapping and its analysis conducted in each partner regions, which we are not going to discuss here, we could develop a new and more suitable to our purposes definition of HUB. A hub is a) single element or an association of subjects cooperating each other; b) physical and virtual subject. So it has an impact not only on the territory, but also in the virtual space, to favor the accessibility of the CCIs, the communication, especially for who do not know this organization, the promotion and visibility for who already are members of a hub (CCIs). So, a hub is a link between the local dimension and the global one; c) a dynamic, not static, organization. So, a hub has to adapt itself to the most specific needs too. It must be listening the companies' desires and needs constantly. It must have a service portfolio able to adapt itself to the changes. It must be open to the emerging sectors of the creative companies and to the culture and heritage sectors.

A HUB is a *switch centre* for the CCI's, a promoter of change, cooperation, exchange, development, and start-up of innovative processes. Its roles of networking and clustering are both aimed at putting into relationship different stakeholder, such as CCIs, SMEs and stakeholders. As EU OMC (2012) report affirms "The networks usually include local and regional partners and they should be linked to innovation policy" (page: 31).

4.3 Development of the network of HUBs: the process

After the investigation of needs of creative workers, which was made conducting a focus group, and defining what is a HUB a phase of selection followed. The objectives were:

- Identifying a first group of subjects to start the operative phase of network building;
- Identifying those subjects able in short period of time (the research time) to start a sharing process of innovative service design offer for CCIs.

The phase of selection was characterized by several meetings and round tables with these group of subjects which slowly is taking shape, since this process is still in progress. Besides those meetings we also discussed inside our working group in order to gradually adjust our proposal of Network of HUBs.

We are now at a crucial phase of final definition of the business model with the partners involved. Thanks to the business model development, conducted by Dr. Cabirio Cautela, we could better identify the roles which our Network of HUBs, called TreeHub, should have:

- Project Animator/Network Orchestrator: TreeHub is expected to support partners (local hubs, creative start-ups & entrepreneurs) in promoting and submitting development project to submit to National and European entities
- Market Bridge: TreeHub is expected to run match making between local hubs, startups and distributive intermediaries (marketplace)

We were also able to identify some few and clear activities which TreeHub could make:

- Skimming and selection of EU, Regional and National Research & Development project oriented to start-ups, creative companies and SMEs

- Transefer of information and project framing (defining aims, pillars and frame to submit a project proposal)
- Scouting of intermediaries, distributive hubs and commercial partners

The next actions which will be accomplished hereafter are:

- the first panel of Hubs will define the Memorandum of Understanding and the rule book of the network
- launch and fostering of National and European Project Opportunities
- Presentation of clustered project proposals
- Scouting of distributive hubs and commercial partners on the basis of start-ups relevant interests
- Mapping and Launching of the first partnerships

5. Creativity as a pillar for public institutions

This last section is related to the third goal of CCAlps Project "*Increase the awareness of public institutions about the role of CCIs*". This is a very high goal and it is in some way across to the whole project. In the next paragraphs we will spread some light on policies which are planned in order to develop the creative and cultural sectors, taking into account Path-dependence approach; in addition to that, we will quickly list the actions through which we are trying to satisfy this third goal.

5.1 Policies for the development of creativity: Path-dependence approach

First of all, looking at what has been already discussed previously, it is necessary to stress the importance of context in policies implementation as well. Indeed, it is not possible to think that a model of governance which has been successful in a city-region would have the same effects in another context. In order to explain this "no-recipe" approach we can refer to Path-dependence theory. This theory is mainly based on the statement that "history matters" (Liebowitz and Margolis, 1995).

Two main sequences of path-dependence have been identified (Muhoney, 2000):

1. self-reinforcing sequences: are usually defined by the so-called increasing returns; Pierson defined it as the accumulation of benefits due to the continue adoption of a certain pattern (Pierson, 2000). The missing point, in this case, is the fact that after a while a certain pattern can become a habit which would be very difficult to change, even if other options would be preferred and/or would be more efficient.
2. reactive sequences: are composed by the reactions to every single event that occurs in an antecedent period of time. For example, going back to post-Fordism, according to Kumar (1995) flexibility had been the crucial process from which all the changes in production and consumption occur, as well those changes had other consequences on the society as a whole.

However the Path-dependence approach could be easily criticized because going back in time with good skills of dialectic and historical imagination as well any outcome would be seen as path dependent (Muhoney, 2000). In addition to this critic, one could also ask how those "starting points" are identified if there are no clear criteria to evaluate them. Especially, in geographers and sociologists studies, several dimensions should be taken into account when they analyze the condition of a city or a region. Musterd et al. (2007:16) suggest:

- the economic dimension: is there a fixed or a flexible economic structure, able to adapt to change?
- the socio-demographic dimension: how does the population composition influence the urban/regional development?
- the institutional dimension: is a city or a region characterized by an entrepreneurial and innovative spirit, visible in governmental regimes?
- the built environment dimension: is the urban/regional structure accessible?

- all the critical events, decisions and individuals with a significant impact on urban/regional development.

5.2 Keyword: Involvement. Operative actions to involve public institutions.

The last objective of CCAlps Project, mentioned, is to *"Increase the awareness of public institutions about the role of CCIs"*. This is a cross-boarding goal which is pursued during the entire research, starting from the fact that partners are mainly public institutions: Regione Lombardia and Regione Piemonte, for example are the Italian partners.

However in order to put in action the increase of knowledge and know-how about CCIs and its workers we involved several public institutions in the most of our research actions.

We could identify different kind of involvements:

- in some research phase
- in public panel discussions, events, round table (as speaker or as public);
- in internal meetings;

Looking at the three different kinds of participation which we identify for the involvement of public institutions, we are going to give a quick description of those action, accomplished since now within the Lombardy partner, that we recognize as particularly important in the accomplishment of the objective.

- Creative Camp: the involvement of public institutions consisted in their collaboration for the writing of the brief and the call, the selection of 40 best ideas, the supervise of the intensive workshops, the final selection of 6 best ideas.
- Transnational events: the involvement of public institutions consisted in their collaboration in the organization (agenda, invitation, etc.), in their participation in these events as speakers. For example, the final transnational event which we mentioned above saw the participation in Round tables and keenotes speaches of several experts and politicians (Roberto Maroni, Regione Lombardia President; Cristina Cappellini, Assessor for Culture, Identity and Autonomies Office; Silvia Costa, European Parliament Officer, etc.)
- Steering committee: in order to maintain the continuity of CCAlps project, each week an operative meeting is planned. During these meetings the research actions are discussed and planned. The participation usually involve: Politecnico di Milano, Regione Lombardia and Unioncamere Lombardia.

6. Conclusions

In this paper we illustrated the actions conducted within the European Project CCAlps in order to respond to three main objectives.

The last which we took into consideration, *Increase the awareness of public institutions about the role of CCIs,* is actually the widest one which in some way comprehends the others two. The rhetoric of policies for creative industries is largely spread, however we think that thanks 1) to an approach deeply rooted in the context 2) to actions of involvement 3) to the design of long-term policies at different levels of governance, it would be possible to build concrete policies focused on the development and the acknowledgement of CCIs within the territory.

A part from this very important and complex level of action, at the basis of the whole research, other two levels were discussed. Their "physical evidences", broadly speaking, were the realization of Creative Camps and the creation of a transnational network of HUBs. Both of them were strongly founded on the recognition that:

1. networks are important, especially for CCIs workers
2. places matter

Therefore policies which want to help the development of local and transnational networks need to rely first of all in a localized perspective and secondarily they need to understand how foster the creation of both formal and informal relationships which can reasonably create permanent, from one side, and adaptable, from the other side, connections.

It's relevant to say that CCAlps project still has to accomplish several important steps, which are:

1. organization of events on the lookout of investors and possibilities for the development of the six projects developed during the Creative Camp 2013
2. organization of Creative Camps 2014
3. follow-up of the constitution of the local network of HUBs
4. constitution of the transnational network of HUBs
5. organization of the final international event in Milan (December 2014)

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KNOWLEDGE, PLACE AND ECONOMIC PERFORMANCE: SMART SPECIALIZATION AND THE TRIPLE HELIX FRAMEWORK IN AMSTERDAM AND SAPPORO

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ABSTRACT: Contemporary economies tend to be globally interconnected, in a context of global competition and fast processes of technological change, requiring a high incorporation of information and knowledge and demanding a strong interaction within local and regional economies. All over the world, the processes of cooperation at local level between private companies and research centres are becoming a central question for public institutions with responsibility on economic development and the "Triple Helix Framework" became commonly used to analyse the interactions developed among them in order to improve local and regional innovative capabilities, competitiveness and sustainable development. A comparative study on the efforts to organize efficiently the processes of cooperation within the Triple Helix framework is developed in this work. The case studies under analysis are focused in two universities, VU University (Amsterdam, Netherlands) and Hokkaido University (Sapporo, Japan), starting with a brief description of the regions (economic, demographic and geographic characteristics), the Universities and the institutional arrangements to promote their interactions at local and regional level. The main characteristics of the Triple Helix frameworks detected in both cities are then analysed against the principles for Smart Specialization strategies, recently adopted by the European Union as a basic concept for regional policies at EU level. From this analysis, relevant policy and managerial implications are discussed, taking into consideration how the collaboration processes among private companies, research centres and public institutions are organized in both cities, evaluating their potential contribution for the emergence of innovative entrepreneurial knowledge based on regional distinctive resources.

Keywords: Innovation, Smart specialization, Resilience, Collaboration, Triple helix

1. Introduction

Contemporary economies tend to be globally interconnected, in a context of global competition and fast processes of technological change, requiring a high incorporation of information and knowledge and demanding a strong interaction within local and regional economies. All over the world, the processes of cooperation at local level between private companies and research centres became a central question for public institutions with responsibility on economic development and the "Triple Helix Framework" is commonly used to analyse the interactions developed among them in order to improve local and regional innovative capabilities, competitiveness and sustainable development. The leadership – or a more prominent role - by one of the partners has important implications on the dynamics and the results of the network, as it is pointed out by Etzkowitz and Ranga (2010).

The "Triple Helix" is a theoretical concept for the analysis of the processes of innovation in contemporary knowledge economies, stressing its local character (rooted in a specific territory), the importance of collaborative networks in order to integrate knowledge into commercial products and services and the role of the interactions between knowledge centres (Universities and research organizations), private companies and governmental agencies. An analysis of the contemporary transformations in economic systems leading to an increasingly importance of knowledge, creativity and human capital is provided by Etzkowitz (2003).

A comparative study on the efforts to organize efficiently the processes of cooperation among the Triple helix framework is developed in this work. The case studies under analysis are focused in two

universities, VU University (Amsterdam, Netherlands) and Hokkaido University (Sapporo, Japan), starting with a brief description of the regions (economic, demographic and geographic characteristics), the Universities and the institutional arrangements to promote their interactions at local and regional level. The relevance of this contextual information is related to the role of the cities as places for the development of collaborative networks in contemporary knowledge based economies. The importance of Universities for the development of collaborative networks is stressed by Saad and Zawdie (2011), although this relatively recent tendency for an entrepreneurial approach to the role of Universities (Etzkowitz et.al, 2008 or Zhou, 2008) potentially imposes tensions within academic communities (Philppot et. al, 2011).

The main characteristics of the Triple Helix frameworks detected in the two cities are analysed against the principles for Smart Specialization strategies, recently adopted by the EU (Foray et.al, 2012) or OECD (2012), in order to provide policy recommendations.

2. Contextual Information

This work compares the situations in two very different contexts: a Japanese city (Sapporo) located in a large region (Hokkaido), with very low population density and an economy still strongly based on agriculture and local companies, where Hokkaido University (HU) has a prominent role in terms of knowledge production; on the other hand there is an European city (Amsterdam), located in a relatively small area (Amsterdam Metropolitan Area), with a very high population density and an economy oriented for services, with strong presence of multinational companies, where other Universities play a relevant role (the University of Amsterdam in the same region but also Utrecht University, Leiden University or the University of Rotterdam at short distance). These different conditions will be described in this Section, Table 1 synthetizes the main characteristics of the urban areas under analysis, Table 2 shows the main distinctive aspects of Hokkaido University and VU University and Table 3 reveals the major elements of the Triple Helix framework in Sapporo and Amsterdam.

Table 1: Sapporo and Amsterdam

Cities	City of Sapporo	Amsterdam Metropolitan Area
Area	Hokkaido Prefecture 83.500 km^2 City of Sapporo 1.120 km^2	the Netherlands 41.500 km^2 Amsterdam Metropolitan Area 1.800 km^2 City of Amsterdam 220 km^2
Population	Hokkaido Prefecture 5.5 million City of Sapporo 1.9 million	Amsterdam Metropolitan Area 2.4 million City of Amsterdam 0.8 million
Population density	Hokkaido Prefecture 70 people/km^2 City of Sapporo 1.700 people/km^2	Amsterdam Metropolitan Area 1.300 people/km^2 City of Amsterdam 3.600 people/km^2
Industry	Hokkaido Prefecture: agriculture, fishery, food production, tourism service City of Sapporo: whole and retail sale, care service, tourism service, food production - Local and regional economy based - Isolated from central industry of Japan	Amsterdam Metropolitan Area: business service, financial service, whole sale, care service - Global economy based - Center of the European economy
GDP	Japan: 4.700.000 million euros (2012) Hokkaido Prefecture: 140.000 million euros (2009) City of Sapporo: 48.000 million euros (2009)	the Netherlands: 602.000 million euros (2011) Amsterdam Metropolitan Area: 91.000 million euros(2011)
Research institute	- Hokkaido University is the largest university in Hokkaido Prefecture	- There is another comparable research university - There are colleges and universities of applied science - Other important Universities (Leiden, Utrecht, Rotterdam or The Hague) at very short distance

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2.1 The Cities (Economy, geography and demography)

2.1.1 Sapporo and the region of Hokkaido

Hokkaido Prefecture is an island located in the most north part of Japan. Established in 1868, Sapporo (1,9 million inhabitants in 2012 and 1,700 people/km^2) is now the capital of Hokkaido (5,5 million inhabitants and 70 people/km^2), the fifth largest city in Japan and the largest in the Prefecture. The central role of Sapporo in the region is also revealed by the weight of the gross local product of the city in the regional context (34%) [City of Sapporo, 2011]. On the other hand, Hokkaido only contributes with 3% for the Japanese GDP [Hokkaido Bureau of Economy, Trade, and Industry, 2010].

Hokkaido has huge green areas and a variety of agricultural and fishery areas. The rich nature and the unique food delicacies have strong impacts on the economy of Sapporo and Hokkaido attracting 45 million tourists per year (mostly from Japan, China and South Korea but also from other East and South Asian countries). Food production industry and services related to tourism in Hokkaido and Sapporo appear as a prospective factor for economic development. The contribution of the primary sector for the GDP in Hokkaido (4,4%) is almost 3 times larger than in Japan (1,6%) [City of Sapporo, 2011]. On the other hand, the ratio of gross regional product from manufacture of Sapporo (4,3%) and Hokkaido (9,6%) are much smaller than that of Japan (22%) [City of Sapporo, 2011]. The distance from Hokkaido to the main economic centres in Japan has clear impacts on the industrial structure of Hokkaido.

Amsterdam Metropolitan Area

The city of Amsterdam is one of the biggest merchant cities in Europe, with a population of 800.000 inhabitants in 2013, registering a continuous growth in the last two decades (722.000 in 1995). With a population of 2,4 million in 2013 (2,1 million in 1995), the metropolitan area analysed in this study is located in the North part of the Randstad, a region in the West part of the Netherlands. Since its early development in the XV and XVI centuries, based on international trade, Amsterdam has a long tradition of ethnic and cultural diversity. Still today, 35% of the population has roots in the migration from Morocco, Suriname or Turkey and citizens from 178 different nationalities live in the city.

In 2011, the gross regional product of Amsterdam Metropolitan Area represented 15% of the GDP of the Netherlands and three main sectors assume particular importance in its economic structure (2009): Business services (16% of the regional added-value), Financial Services (13,7%) and Wholesale (10,6%). Manufacture lost much of its importance in the last 15 years (decreasing from 11,5% in 1995 to 6,6% in 2009) and agriculture almost disappeared in the same period (from 1% to 0,5%). Tourism has registered an important growth in the last years, making Amsterdam the fastest growing European destination (van Bree, T., de Groot, H. et al. 2012). Amsterdam ranks in the 5th position in Investment Climate among the European cities and almost 200.000 foreign companies operate in the region. Its central location within the European context enhances the importance of transports: Schiphol airport is the 3rd and the Port of Amsterdam is the 4th at European level.

2.2 The Universities

2.2.1 Hokkaido University

Hokkaido University has started as national Sapporo Agricultural College in 1876. Passing through the period of Hokkaido Imperial University until the World War II, in 1947 it was renamed Hokkaido University. Now it is the largest university in Hokkaido, with a main campus in the city centre of Sapporo and another one in Hakodate City (Faculty of Fisheries Sciences). All campus facilities belong to the national government, which controls all the constructions and its subsidies (including the Northern area of the Campus, where private and public institutions are located, in order to develop collaborative work with the academy).

One of the main actors at the North Campus of HU is the Creative Research Institution (CRIS), founded in 2002 and aimed to be a flexible and liaison research institute, to be responsible for the

definition of a strategic plan of the university's interdisciplinary research, to promote shared research facilities, to maintain common large infra-structures and laboratories and to support researchers for collaboration with other organization.

The other important organization at North Campus is the Centre for Innovation and Business Promotion (CIBP), founded in 2007. CIBP aims at bridging researchers and private companies, coordinating collaborative projects with other sectors, running an incubator, promoting technology transfer, creating new industries, and supporting licensing and managing intellectual properties.

However, despite of the holistic policy for Triple Helix defined by the university in 2005, these aims of CRIS and CIBP were not achieved and the activities of CRIS declined as the governmental fund "Super Centre of Excellence Project" finished [Hokkaido University, 2010]. Moreover, no clear strategy for the collaboration with other sectors has been implemented by CRIS or CIBP for the University as a whole. In fact, there is no clear responsibility for this at both institutions, which is a result of the lack of a top-down strategy covering the whole university.

Nevertheless, the governmental criteria for the economical contribution to Universities according to their excellence has recently shifted from the number of intellectual property rights or the revenue of joint/commissioned research to the number of jobs created or accessibility to market of innovations, imposing a new pressure to increase collaboration. Disposing of an adequate infrastructure at the North Campus and human resources at CRIS and CIBP, this represents an opportunity for Hokkaido University to holistically foster collaborative projects and spill-over effects on society under the Triple Helix framework.

2.2.2 VU Amsterdam

VU University is one of the two research oriented universities in Amsterdam (besides the University of Amsterdam, UvA) and it includes the VU University Medical Centre (VUmc), located in the West area of the Campus, where scientific research is developed in five multidisciplinary research institutes. VU has a single campus located in South Amsterdam, where the University and the City of Amsterdam are developing a recently launched 30 years plan, including new infrastructures for research and collaboration with the business sector, accommodation for students and increasing social interaction with the local community.

From a strategic point of view, education and research based on the Triple Helix framework is stated as one of the important issues of VU in the Strategic Plan 2011-2015 (VU Amsterdam, 2011). As it happened in all the higher education institutes in the Netherlands, the funding from public sources decreased in the last decade, forcing VU to exploit new sources of resources, such as research funding from the private sector in collaborative research projects.

VU runs one of the three Technological Transfer Offices (TTOs) in Amsterdam (one for UvA, one for the Academic Medical Centre, and one for VU/VUmc). The TTO for VU/VUmc participates in the definition of the research strategy for the University, supports researchers to finance their projects and collaboration with private companies. An incubator has been created inside the Campus in the 1990s but it has been recently closed, due to the inadequacy of working spaces or the lack of short-term results. Results of collaborative research (patents or spin-offs) have been mostly generated in fields related to exact sciences and to the institutes located at VUmc (Health sciences). Cooperation processes between VU and the University of Amsterdam (UvA) have recently been reinforced, leading to the establishment of a common college for liberal arts in 2012 (the Amsterdam University College) or the Academic Centre for Dentistry Amsterdam (ACTA), also involving private companies.

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Table 2: Hokkaido University and VU University Amsterdam

Universities	Hokkaido University	VU University Amsterdam
Facts and figures	12 faculties, 3 institutes 18.000 students, 4.000 staffs	12 faculties, 14 institutes 22.500 students, 4.400 staffs
Organiza -tion and knowledge transfer	Creative Research Institution (CRIS): - Interdisciplinary research institute and liaison center for collaborative reserach projects Center for Innovation and Business Promotion (CIBP): - Matching of researchers and companies - Coordinating collaborative projects - Running incubator - Technology Transfer - Creating new industry - Licensing and managing intellectual properties	Technical Transfer Office (TTO): - Support for researchers on fund application - Advisory for university's research strategy - Organizing small projects among researchers and companies - Promotion of internship to faculties - Matching of researchers and companies - Help reach international market - Generating spin-offs
Policy	- A holistic policy was defined in early 2005. - Triple Helix was also referred in the philosophy (practical learning)of HU. - These policies have not been implemented in the entire university.	- The importance of Triple Helix is stressed in "Strategic Plan 2011-2015" to exploit new financial resources
Physical infra -structure	- Facilities at North Campus are dedicated to interdisciplinary or joint research with other sectors. - Grand design of North Campus has not been implemented as planned - All facilities are owned by national government	- New campus is under development with 30 years strategic plan - Multifunctional campus: Promoting interdisciplinary research, Triple Helix, and social interaction. Developing students accommodation. - Compact and flexible campus: Parting excess facilities and reorganizing working places. - The university owns facilities

2.3. The Triple Helix Frameworks

Table 3: Triple Helix Framework in Sapporo and Amsterdam

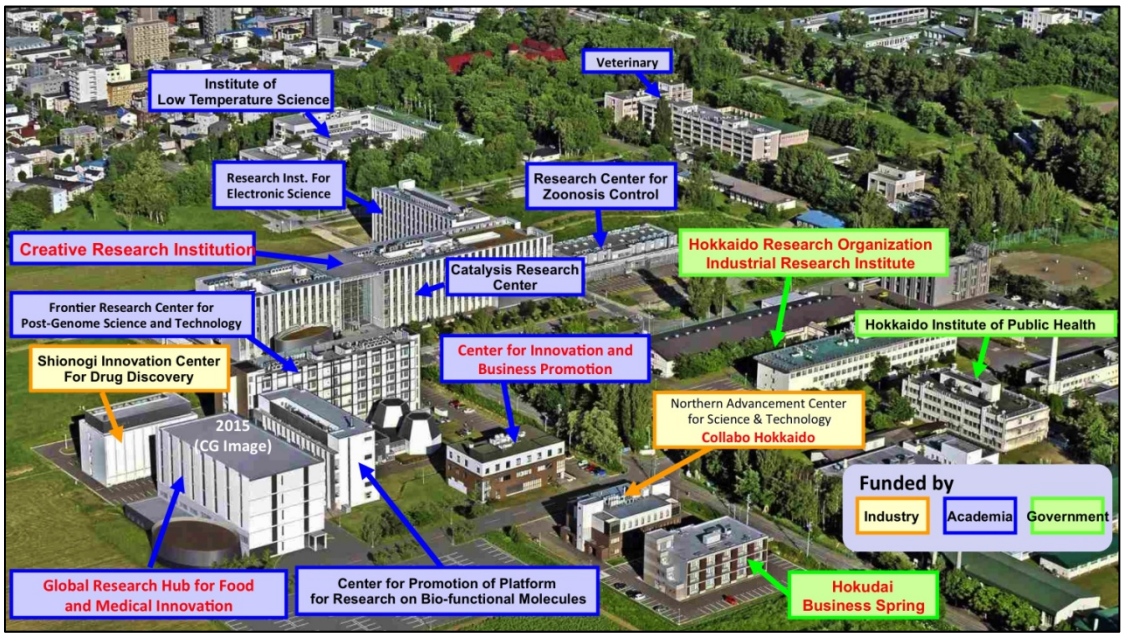
Triple Helix Frameworks	Research and Business Park Project Promotion Council (RBPPPC)	Amsterdam Economic Board (AEB)
Organiza -tion	- North Campus triggered RBPPPC framework. The idea was proposed by a certain local private company. - RPB is physical infrastructure oriented - Budget application for CRIS construction motivated Hokkaido University to participate in RBPPPC - 12 local organizations involved - One of the participating organizations is assigned the secretariat task - No human resources in RBPPPC	- AEB is led by municipality of Amsterdam - Public-private collaboration oriented since AIM and Amsterdam Knowledge Network - VU is a member of executive board - Multinational companies involved - AEB is the board and the secretariat of the framework - AEB has its own human resources
Strategy	- Guidelines: Creating high added-value industry utilizing local food. Developing medical and pharmaceutical industry. Combining these industries to health care. "Green innovation" for post carbon society. - No systematic common rule to promote projects	- Common agenda has been set to promote 7 prior clusters: Creative industries, Food and Flowers, ICT, Logistics, Red Life Sciences, Tourism and Congresses, Financial and business services - AEB is conducting systematic project evaluation and coordinating Triple Helix project for competitive funds application (mostly European Union funds)
Fund	- No RBPPPC's own budget for project implementation - 3 on-going projects are funded by the national government; MEXT (more than 7 million euros/year) - Half of the operational cost (92.000 euros/year) is covered by one participating organization; AIST	- No AEB's own funds for project implementation - Total project budget (40 - 50 million euros/year) is covered by external funds and AEB. - Operational cost (4.5 million euros/year) and project budget is shared with 3 sectors.
Achieve -ment and project	- 1 project is still under way and 2 finished projects have been taken over to the current 2 ongoing projects. - All of them are officially indicated as RBPPPC activities. Nevertheless, no explicit initiatives by RBPPPC.	- Previous experiences to concentrate academic and entrepreneurial activities in specific locations (like the Science Park) didn't achieve the expected results (only regarding collaboration between universities) - 40 projects have been done or are running by AEB's initiatives. - Collaboration between VU and University of Amsterdam (UvA) has a strong impulse from AEB

2.3.1 Research and Business Park Project Promotion Council (Sapporo)

The framework of Hokkaido University Research and Business Park (RBP) was established in 2003, and its project promotion council (RBPPPC) was founded in 2004. The conceptual framework for RBP had been proposed in 1999 by Hokkaido Electric Power Company, the biggest company based in Hokkaido. This was a new challenge to develop collaborative work among the 3 sectors by using physical infrastructures at the North Campus of Hokkaido University. HU was invited to join this movement in 2002 so as to implement the Triple Helix framework at the North Campus.

Twelve organizations participate in the RBPPPC: Hokkaido University; Hokkaido Prefectural Research Institute; National Institute of Advanced Industrial Science and Technology (AIST), [Knowledge sector]; Northern Advancement Centre for Science and Technology (NOASTEC foundation, supported by private organizations, with an incubator at the North Campus); and Hokkaido Economic Federation [Private sector]; City of Sapporo; Hokkaido Prefecture; Hokkaido Branch of Organization for Small and Medium Enterprises and Regional Innovation (with an incubator at North Campus); Innovation Plaza of Japan Science and Technology Agency (closed in March, 2012); Hokkaido Bureau of Economy, Trade and Industry; Ministry of Land, Infrastructure, Transport and Tourism; Hokkaido Regional Development Bureau; and Hokkaido Branch of Development Bank of Japan Inc. [public sector]. Representatives of all these organizations hold an official meeting twice a year and a board meeting every month. However, there is no systematic decision making process in these meetings. RBPPPC itself does not have budget to hire personnel and to implement projects, even though the local actors are involved in the board. Its operational costs are shared among the participants, supporting the council's structure (half of the cost is covered only by AIST).

Currently, RBPPPC has 4 strategic guidelines (Creating high added-value industry utilizing local food; Developing medical and pharmaceutical industry; Combining food industry and medical industry; "Green innovation" for post carbon society) and 3 on-going major projects in the fields of pharmaceutical and medical innovation, and food and health care led by researchers of HU and funded by the national government. Nevertheless, the guidelines of RBPPPC simply follow the university's projects orientation, being too generic to mobilize private companies. As a result, many collaborative projects led by researchers of Hokkaido University have been conducted without initiatives by RBPPPC. Figure 1 (North Campus) shows the organizations involved in RBP, revealing



the clear dominance of academic institutions, while Figure 2 represents the interactions developed among these different institutions.

Figure 1: Research Business Park (North Campus of Hokkaido University)

(Notes by Tsunehisa Araiso, CIBP, Hokkaido University, 2012)

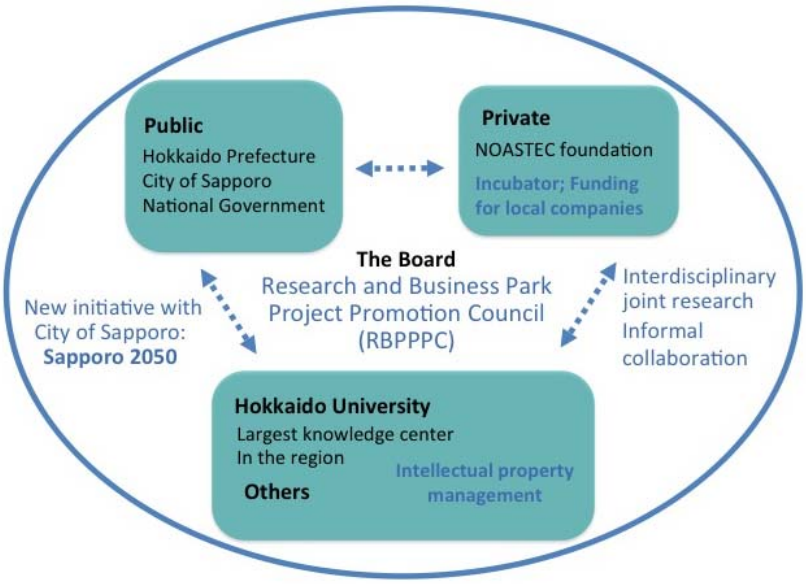


Figure 2: Collaborative framework at RBP

The local economy in Hokkaido is mostly based on small companies, connected to primary activities and without financial conditions to promote a relevant investment in new business and technological development. Nevertheless, the existing physical conditions at North Campus and knowledge of the university oriented to R&D might break the economic threshold toward the entrepreneurial discovery. The role of RBPPPC as an effective local network must be redefined in this context.

2.3.2 Amsterdam Economic Board

The city of Amsterdam strategically aims to be a top 5 city in Europe through knowledge creative innovation and green sustainable initiatives (City of Amsterdam, 2010, 2011). The collaborative work between public sector and private sector has been developed since the 1990s, with the physical implementation of the Amsterdam Centre for Entrepreneurship, the Sciencepark (for life sciences and ICT), the Medical Business Park or the creation of coordination institutions like the Amsterdam Innovation Motor (AIM) and the Amsterdam Knowledge Network. Nevertheless, these infrastructures and organizations did not reach the expected objectives in terms of collaboration.

Recently it was created the Amsterdam Economic Board (in January, 2013, merging AIM and Amsterdam Knowledge Network), involving and coordinating collaborative projects among universities, other university colleges, public institutions and private companies, through the definition of a common vision, multi-year programme-based approaches, targeted plans of action and strategic leadership. AEB has been created with a strong impulse from public institutions (the city councils of the cities involved), with an important role of the Mayor of Amsterdam (who is now the chairman of AEB). The definition of a common vision, the coordination of activities from different partners and obtaining co-funding with national government and European Union are among the main tasks to be performed by AEB.

AEB has three main strategic and quantified objectives related to growth, innovation, collaboration. 7 priority clusters were defined, combining a strong regional economic importance with the existing technological capabilities (Creative industries; Food and Flowers; ICT; Logistics; Red Life Sciences; Tourism and Congresses; Financial and business services) [Amsterdam Economic Board, 2011]. The management of AEB includes 9 representatives of the industry, 5 members from knowledge institutions and 4 other members from public (local) authorities. This Board has four meetings a year for strategic discussion and advice on project proposals arising from the members. Before the advice of the Board, these proposals are assessed by a Steering committee, according to their contribution

to the economic growth of the region, the amount of innovation derived from the investment and the international potential for the cluster. Additionally, each priority cluster has its own "Core group" (to advise the Board) and "Cluster Table" (to advise the Core Group on strategy and growth). Figure 3 represents this structure.

Figure 3: Structure of the Amsterdam Economic Board (based on Bleeker, 2012)

The funds to cover the operational costs of AEB come mostly from public organizations (the municipalities involved) but all the members (including knowledge centres and private companies) have to contribute. Globally, the financial contribution to the operational budget from public (local, regional, national and EU), private, and knowledge sector is 46%, 35%, and 19%, respectively.

AEB doesn't have its own budget for projects but the operational budget is also devoted to the preparation of applications for co-finance in the European Union or the national government. European Funds (28 to 30 million euros/year) represent 60 to 70% of the total project budget. 40 projects have been developed under the initiatives promoted by AEB.

The collaboration between private-public sectors is leading these projects and it is clear that the interactions between private companies and knowledge centres are still far from the objectives of AEB. For example, VU participates in only one out of 32 activities under Smart City Project by AEB. On the other hand, processes of collaboration between the Universities of the city (VU and UvA) had a clear impulse from AEB.

3. Smart Specialization Strategies in the Amsterdam Metropolitan Area and Hokkaido

The concept of smart specialization has been recently developed at theoretical level (2008) but very quickly adopted as a key-concept for the regional development and innovation policies in the European Union (Foray and Hall, 2011) and integrated in the Innovation Union strategies within the Horizon 2020 programs (Foray et al, 2012). This concept does not represent a radical transformation in the general ideas about innovation strategies but it implies some differences regarding the previous theoretical approaches and policy orientations. Regarding the previous policy framework (RIS 1 and RIS 2), this new key concept for the Regional Innovation Policies 2014-2020 (RIS3) aims to increase the focus in a very short number of thematic priorities, to support "bottom-up" innovative processes, to encourage experimentation and strategic flexibility, to promote a bigger involvement of regional stakeholders in the planning process (including the definition of a "common vision" for the future of the region, the evaluation of the strategy and the monitoring process) and to be supported by monitoring systems based on precise indicators.

According to this idea, each region should develop place and practice-based innovation processes through an entrepreneurial process of discovery (including universities or public institutions as possible creators of "market-oriented" knowledge), supported by the region's distinctive industry structures and knowledge and focused on the creation of unique assets and capabilities, based on its own strengths. These strategies should follow a broad concept of innovation, aiming to increase the

scale and scope of production, generate spill-overs from a specific specialization pattern and from the related variety between interconnected sectors.

The identification of possible inter-cluster or inter-sectoral relations and connections, in order to generate spill-overs based on "Key Enabling Technologies" (technologies with impact on different sectors, with potential to be developed at local level) or Information and Communication Technologies, should follow the identification of priority sectors. This strategy should also consider the societal and environmental contemporary challenges and to be flexible enough in order to allow experimentation, creativity and adjustment to changing conditions. Figure 4 represents the smart specialization concept. Table 4 obtained from the contextual information shown in chapter 2 summarizes the approach of AEB and RBPPPC to Smart Specialization strategies.

Figure 4: Smart specialization strategies

Table 4: Smart Specialization Principles in AEB and RBPPPC

	AEB	RBPPPC
Key priorities	7 priority clusters	From a wide range of high-tech sectors like life science to focus on food sector.
Key enabling technologies	Unclear.	Food and medical technologies applied to primary sector, health or tourism.
Entrepreneurial discovery	- "Cluster table" selects projects with commercial potential for each priority cluster - Steering committee evaluates before decision to support from the Board.	Not defined (selection of project topics much based on the orientation of the University).
Collaborative leadership	Local government, private companies and knowledge centers represented in the Board.	- No shared leadership formally established. - Financial support for projects is from national government. - Local government is starting to take an initiative for collaborative projects.
Shared vision	Strategic plan decided by the Board, with the participation of all the members (local government, private companies and knowledge centers).	Strategies combined to the on-going projects organized by the university.
Monitoring	Clear and measurable objectives to be evaluated by all the members.	Broad objectives, difficult to evaluate.

3.1. Amsterdam Economic Board

The structure of the AEB is clearly oriented for a collaborative leadership among local governments, knowledge centres and private companies. As a consequence, the strategic objectives and the performance of the Board can be collectively monitored and evaluated by all the partners. Additionally, the creation of the "Clusters Tables" creates a possibility for the emergence of "bottom-up" projects and proposals, which should be coherent with the "top-down" guidelines defined by the Board (and collectively accepted) (see 3.3). These characteristics seem to be very close to the principles of the Smart Specialization strategies, although it's too early to evaluate the results (AEB was created in January, 2013).

The existence of large companies operating in the city favours their integration in a structure like AEB, as normally these companies are better organized, with more formalized strategic orientations and with human resources available to participate in these collaborative initiatives, which is often difficult for SME. The impact of AEB's initiatives in local SMEs is an interesting aspect to evaluate in the future. The same applies to the priority clusters that were defined: apparently, 7 clusters is not exactly "a limited number of priorities" and this creates problems for the definition of "key-enabling technologies" (apart from the role of ICT, with implications in all the clusters). Nevertheless, this diversity of priority sectors is close to concept of "unrelated variety", preventing the exposure of the regions against negative sectorial shocks. In other terms, unrelated variety can increase regional resilience in face of an external, enhancing the possibilities for a quick recover towards the previous (or a new) growth path (Neffke, Henning and Boschma, 2009). Again, this is also an important aspect for the evaluation of the future performance of AEB.

3.2. Research and Business Park Project Promotion Council

Despite the initial leadership by a local company, the RBPPPC of Hokkaido University is still very dependent on the role of the University, also as a consequence of the entrepreneurial structure of the city of Sapporo and the region of Hokkaido, largely dominated by small companies with a strong importance of the primary sector. This sectorial background might affect negatively the funding for industrial research projects and also to the continuity of RBPPPC. Ad hoc project implementation depending on competitive funds and the lack of human resources providing opportune facilitation makes RBPPPC difficult to attract the private sector. A "common vision" or a collective monitoring and evaluation will be able to be properly addressed only after the involvement of private sector. Similarly, the "entrepreneurial processes of discovery" are difficult to obtain if local companies are not engaged in the structure.

Anyway, the shift of the focus of the priorities from a large range of high-tech sectors to the agro-food production, developing "key-enabling technologies" related to life sciences that can have positive impacts on different activities (like food production, health care, medical products and services of tourism) seems to be adequate to the "Smart Specialization" conceptualization (and to idea of "related variety") although this can reduce regional resilience in case of a negative shock affecting the food sector. Recent initiatives developed by the City of Sapporo aiming to increase collaboration with knowledge centres also provide positive impact on it.

4. Discussion

This comparative study on the Triple Helix framework focused on two different universities' cases allowed to identify key items for the development of these frameworks, extracted from the societal structure of the city and the university. The following implications were obtained considering the contextual information for both cities and the concept of Smart Specialization for regional innovation strategies.

In Amsterdam's case, the board of Triple Helix framework, Amsterdam Economic Board (AEB), is taking a collaborative leadership among three different sectors. The financial and human resources of AEB provide opportunities for fund raising and project implementation, allowing the board to

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attract all kind of stakeholders. The existence of a shared common vision clearly expressed in strategic plans also allows the performance of the collaboration structures to be systematically evaluated by all the participants. 7 clusters also have been defined in line with this shared vision, enabling the board to evaluate bottom-up projects according the top-down guidelines. Nevertheless, the large number of priority sectors that have been defined can be seen as a too broad definition of priorities, creating difficulties for the identification of key enabling technologies for regional development.

On the other hand, the focus defined at the RBPPPC of Hokkaido University on Life Sciences and its connections to food production, health products and services or tourism activities is extremely relevant considering the potential to maximize the regional economic impact of technologies based on the university's knowledge and creative resources. This focus would also enable the board to define key priorities of clusters and a shared vision.

Nevertheless, the difficulties to involve local companies from Hokkaido in collaborative processes within the Triple Helix framework remain an unsolved question. In fact, the small dimension of these companies and their close connection to the primary sector impose more difficulties to the development of collaborative innovation processes. The existing infra-structures at the North Campus, the awareness of the importance of this collaboration among the researchers of Hokkaido University and the recently launched long-term collaborative projects between the city council and the University are positive elements for the improvement of these processes in the future.

Recently, the role of "civil society" has been integrated into the theoretical approaches to these collaborative networks and the concept of "Quadruple Helix" tends to the replace the idea of "Triple Helix" (MacGregor and Marques-Gou, 2010). The organizations acting "in between" the Universities, private companies and public bodies also play an important role mediating those relations and contributing for the success of these collaborative networks. NGOs, professional associations, foundations or interest groups are among these organizations (Metcalfe, 2010). As the existing collaborative structures in the cities under analysis are based on the Triple helix conceptualization, this concept is still considered adequate for the purposes of this work. Nevertheless, these recent theoretical developments suggest that other kind of organizations with relevancy in the urban and economic systems should be included in the institutional frameworks for collaborative networking.

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BUILDING RESILIENCE CAPACITY THROUGH INNOVATION

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CRIANDO CAPACIDADE DE RESILIÊNCIA ATRAVÉS DA INOVAÇÃO: DESTAQUES DE RELATÓRIOS EUROPEUS

RESUMO: Mais do que nunca as empresas deverão desenvolver estratégias para lidar com crises e choques na economia e sociedade. Elas necessitarão da chamada capacidade de resiliência, a qual é um termo agregador de estratégias e modelos de planeamento que podem ajudar as empresas a desenvolver a capacidade de lidar com desafios. O presente artigo é baseado num conjunto de trabalhos que exploram relatórios Europeus recentes sobre performance de inovação. A discussão constata que as empresas terão de encontrar novos modos de reduzir a sua resistência ao risco e tornar-se mais flexíveis. Para serem mais resilientes, deverão adotar estratégias que lhes permitam desenvolver capacidades que melhor respondam e se adaptem aos choques socio-económicos. Tais capacidades devem ser planeadas no sentido de tornar os nossos atuais sistemas económicos mais flexíveis e dinâmicos. As pequenas e médias empresas estão mais expostas às pressões competitivas. Assim, a escolha de setores e de parcerias são oportunidades fundamentais. Com a polarização da criação do conhecimento na Europa, poucos são os países responsáveis pela maior parte da inovação e produção de conhecimento. Por isso, deve ser dada atenção ao investimento em difusão e captação de conhecimento dependendo do contexto nacional. O facto de algumas características do sistema nacional de inovação explicarem a persistência em inovar face a choques económicos traz esclarecimento sobre a resiliência de certas empresas.

Palavras-chave: crises económicas, performance de inovação, resiliência, sistemas de inovação, startups.

BUILDING RESILIENCE CAPACITY THROUGH INNOVATION: HIGHLIGHTS FROM EUROPEAN REPORTS

ABSTRACT: More than ever firms will be required to develop strategies for coping with shocks and stresses to our economic and social infrastructures. They will need to build the so called resilience capacity, which is an umbrella term for the planning and design strategies that can help firms develop the capacity to cope with challenges. The present work is based on an assessment of works that explored recent European reports on innovation performance. The discussion acknowledges that firms will have to find new ways to reduce their risk-aversion and become more flexible. To become more resilient, firms will need to adopt strategies that allow them to develop capacities that better respond and adapt to the economic and social stresses. These capacities must be planned to transform our current economic systems into much more flexible and dynamic ones. Small and medium enterprises are more exposed to competitive pressures. Thus, the choice of sectors and the design of public procurement policies are fundamental opportunities. With the polarization of knowledge creation across Europe, a few countries are responsible for the bulk of innovation and knowledge production. Therefore, attention should also be given to investment in knowledge diffusion and absorption depending on the specific national context. The fact of some characteristics of the national innovation system explain persistency on innovating in response to major external shocks sheds light on the resilient behavior of firms.

Keywords: economic shocks, innovation performance, innovation systems, resilience, startups.

1. Introduction

Most managers agree that innovation enhances business performance. But how can companies manage innovation in order to become more resilient? Resilience is an important concept for

companies in turbulent times. Researchers refer it as the capacity to endure stress and bounce back. It is an umbrella term for the planning and design strategies needed to help firms develop the necessary capacity to meet challenges. The need to build capacity for resilience will require firms to develop strategies for coping with continuous shocks and stresses to our economic and social infrastructure systems. This work compares the results from recent European reports on the impact of economic crisis on innovative performance. These reports have captured differentiating impacts of the world crisis on innovation behavior. Some of the impacts acknowledge that firms will have to find new ways to reduce their risk-aversion and become more flexible. For example, through dynamic design strategies which are based on clear guidelines for information systems design fitted to a flexible organizational design. The main objective is to cope with infrastructural shocks, in order to facilitate the development of a greater capacity for future resilience.

In social systems, resilience is the added capacity of humans being able to anticipate and plan for the future. In both human and ecological systems, resilience is conferred by their capacity for adaptation to the exogenous stresses. Thus, to become more resilient, firms will need to adopt strategies that better respond and adapt to future economic and social crisis. Those strategies will involve firms in a complex web of planning decisions that must be designed to transform our current economic systems into much more flexible and dynamic ones. Planning and design competences will be more challenged to find new paradigms, new tools and new business models in order to implement future resilient organizational structures.

Besides the correlation between insufficient financial resources and stagnation, at an increasing number of firms, the problem is also connected with technology solutions and lack of related skills and knowledge (Antlová, 2010). Therefore the companies try to develop their applications in-house, sometimes not in a sophisticated mode. In companies where the potential of new technologies is incorporated in the long term business strategy, and where the relationship with costumers is developed, there is more sustainable growth (Fernandes, 2010). Then it is important to improve the technology competencies of management and employees.

The development of knowledge networks in organizations is one concrete solution. A knowledge network involves a set of people, resources and relations assembled in order to capture, transfer and create knowledge. For example, there are some firms with their own wiki-type knowledge database of practices shared by employees whose contributions are then monitored using balanced scorecard (Kaplan and Norton, 2004). This tool provides managers with comprehensive frameworks that translate a company's strategy into a set of performance measures. These measures can be used to help align individual, organizational and cross-departmental initiatives. This tool is then used as a communication, informing and learning system. Previously, it was used the enterprise architecture approach for integrating and crossing initiatives for aligning proposes. However, this approach has lost flexibility and real-time dynamism due to the standardization of its application. More dynamic approaches or models are required using wikis, balanced scorecard, action matrixes, etc.

The above-mentioned cases have included in their corporate strategy's requirements the consistent use of their costumers and employees' knowledge/experience. On the basis of this attitude to management, corporate knowledge management strategies are significant factors of organization's growth to be incentivized. In today business environment, not only organizational but also individual knowledge can make difference in gaining competitive advantages. It is crucial to align business strategy with knowledge management, especially through knowledge sharing and creation. Also, most effective technology tools should be integrated to support business and knowledge processes and help create a sharing environment. Small and medium enterprises are more exposed to high competitive pressures. Thus, they have to search for new business opportunities and this effort has to be significantly supported by information system tools' sharing.

This paper is organized as follows. The next section puts forward the theoretical background of the subject. Section 3 presents some sources for comparison and discussion on innovation and crisis resilience across Europe. Section 4 explores aspects and challenges of resilient systems of innovation. And section 5 concludes this work with some final considerations.

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2. Resilience: the balance between efficiency and renewal

In the 1980s companies were primarily interested in furthering innovation through specializing in fields of expertise. In the 1990s the emphasis shifted toward sharing knowledge across these fields of expertise and facilitating internal knowledge transfer (through company intranets and best-practice teams). Today, companies go beyond conventional knowledge, searching for new knowledge and new insights. The important thing is the company's ability to recover fast and quickly get back in the game with new strategies and business models. These are resilient companies, seeking new knowledge both within and outside them and working hard to sustain their entrepreneurial behaviors. Lengnick-Hall and Beck (2005) differentiate three types of resilience:
- 'cognitive resilience', when the company has a deep understanding of what is happening around it, not only noticing how things change but making sense of those changes;
- 'behavioral resilience', when the company reacts to the opening communication channels creating interpersonal ties and seeking multiple sources of information when uncertainty increases;
- 'contextual resilience', when the company depends on internal social connections, interpersonal networks which rapidly help it cope with and respond to changes.

However, companies are failing more frequently and innovating less quickly because the world is becoming turbulent faster than organizations are becoming resilient (Kanerva and Hollanders, 2009). Even successful companies are finding more difficult to deliver consistently superior returns. Most companies have been working in retrenchment mode, resizing their cost bases to accommodate this unprecedented competitive pressure. Focus is reinforced every day through many ways: training programs, benchmarking and measurement systems. But are these ways reinforcing strategic variety and wide-scale experimentation? And how have these been reflected in employee training, management processes and performance measuring? Resilience will only become a process when companies dedicate as much energy and work for continuous renewal as they have done for operational efficiency (Hamel and Valikangas, 2003).

Some strategies have focused on corporate attributes, while others have focused on issues such as risk awareness and reduction of vulnerabilities. And strategic resilience has been defined as a capability companies need to reinvent themselves in order to overcome barriers and develop multiple sources of advantage (Reinmoeller and Baardwijk, 2005). According to these authors, most resilient companies are those that continually integrate a dynamic balance of four main strategies: 1) knowledge management, 2) exploration, 3) cooperation, and 4) entrepreneurship.

Thus variety matters for resilience; if the range of strategic alternatives a company explores is narrower than the breadth of change in the environment, its business will be more vulnerable to turbulence. Also, if a company systematically favors existing programs over new initiatives and experimentation, it will find itself investing in declining strategies and outdated programs. Open innovation is bridging internal and external resources and executing on the opportunities that arise from this combination. Beyond the benefit of ensuring that companies remain focused on the marketplace, working with external partners means that executives become familiar with other ways of doing things. Open innovation also allows corporate leaders to evaluate their practices in light of other real-world examples. As open innovation becomes more prevalent the functional, divisional or matrix organizational structures we know today will change. New structures will be a clear side effect of these types of initiatives.

3. Which factors weight most?

Comparing the results from the Innobarometer 2009 survey (European Commission, 2009b) and the European Innovation Scoreboard 2008 (European Commission, 2009a), a question arises: which are the most resilient companies? These surveys acknowledge that more resilient firms (facing the crisis) are:
- the more innovative, where products and services account for a larger share of sales, and where R&D (Research and Development) is part of their innovation activities;

- with broader innovation strategies, such as open innovation and user innovation;
- operating more in local markets than in international markets;
- that have public support;
- that have been experiencing effective rates of improvement in their innovation performance.

This could indicate a redirection of firms' activities to their home markets, and a need to reopen export markets for economic recovery. Surprisingly, most new firms in EU (European Union) are micro firms employing less than four people. It is the individual entrepreneur who starts his own business, alone or with a few employees. Thus, SMEs (small and medium enterprises) play an important role in the net growth of enterprise population. They are often established by young people with new ideas and keen on introducing innovations.

The continuous renewal of the enterprise population will stimulate the competitive position of the EU economy. According to the 2008 EU Survey on R&D Investment Business Trends (European Commission, 2009c), the most successful business starters are in the service sector: research and development; computer and related activities; and real estate activities. And the subsectors that have the highest contribution to employment growth are also in the service sector: real estate activities; financial mediation; construction; hotels and restaurants. Adversity can turn into advantage: high unemployment can lead to more start-ups as people discover opportunities to start a business, either as employee or as young starter. Also enterprise death creates opportunities to latent entrepreneurs for start-up. Fast growing enterprises, besides creating more employment, they create additional growth of production in other enterprises through outsourcing relations.

Back to the comparison grounded on European reports, Filippetti and Archibugi (2011) crossed two indicators: InnoStruct (composite indicator addressing structure of country's system of innovation) and InnoInv (indicator addressing country's innovation performance) for the 2006-2008 period and then for the year 2009 (because this transition is specially related with the crisis impact). The crossing of these two indicators resulted in the following integrative map:

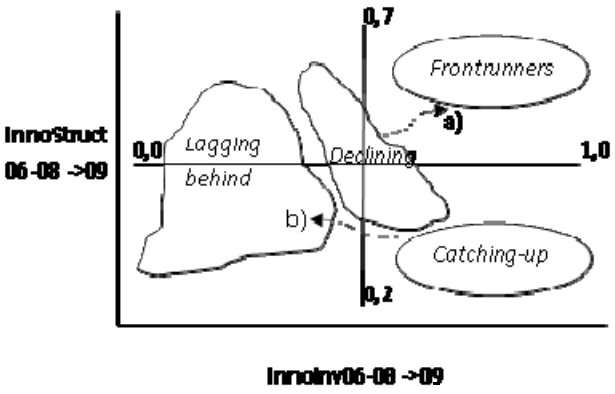

Figure 1. Innovation performance (*InnoInv*) and national innovation system strength (*InnoStruct*)

Source: Filippetti and Archibugi (2011)

Legend:
- Frontrunners: this group consists of countries that show both a consolidated leadership of their innovation performance and an increase of their investments in innovation. Countries: Sweden, Switzerland, Finland, Germany, Austria;
- Catching-up: these countries do not have a high strength of their national innovation system, but they have been increasing their investments. This group includes the five new Member States. Countries: Romania, Lithuania, Bulgaria, Slovakia, Poland;
- Declining: despite having a strong national innovation system, these countries have been relatively less increasing their innovation expenditures. Countries: Denmark, UK, Luxemburg, Belgium, France, Netherlands, Slovenia, Czech Rep., Norway, Greece;
- Lagging-behind: these countries are characterized by a low innovation performance at national level and a low performance in innovation spending. Interestingly, this group includes some new Member States (such as Hungary and Latvia) as well as larger countries (like Italy and Spain). Countries: Ireland, Estonia, Portugal, Spain, Italy, Hungary, Latvia.

4. How relevant is the NIS (National Innovation System) structure?

According to innovation system theory, innovation and technology development are results of a complex set of relationships among actors in the system which includes enterprises, universities,

research institutes and other actively related institutions. The concept of a national system of innovation was developed by Lundvall (1988), and was later applied to regions and sectors.

As a consequence of the crisis (from 2006-08 to 2009), the distance between the Frontrunners and the other countries has increased. This result is related with three major factors, among which the national innovation system has an important role (Filippetti and Archibugi, 2011):
- the impact of the global economic downturn on firms' investment in innovation had different magnitudes across European countries (such as the new Member States which initially were catching up and now are lagging behind -> b);
- structure of the national innovation system matters: countries endowed with stronger innovation systems are those less affected by the recession (such as the countries which initially were declining and now are tending to behave as frontrunners -> a);
- National innovation system's pattern: the historical processes behind the development and interaction of organizations and industries with national policies and institutions over time also contribute to the strength of the NIS (Fagerberg et al., 2009). This factor is called 'path dependency'.

For example, the case of Netherlands (a) has "strong local agents and a good coordination of them to explore their synergies, and this creates national research", said Peter Nijkamp at an international meeting (Nijkamp, 2011). If these principles of connectivity are accomplished, in order to reinforce research initiatives for national and international projects, national research will function more effectively.

The next figures show several comparisons among those countries. For example, figure 2 illustrates venture capital investment (as a percentage of GDP) by country, depending on funding seed/start-up initiatives or early development expansions. Indeed some gaps on these results are related with the factors above mentioned.

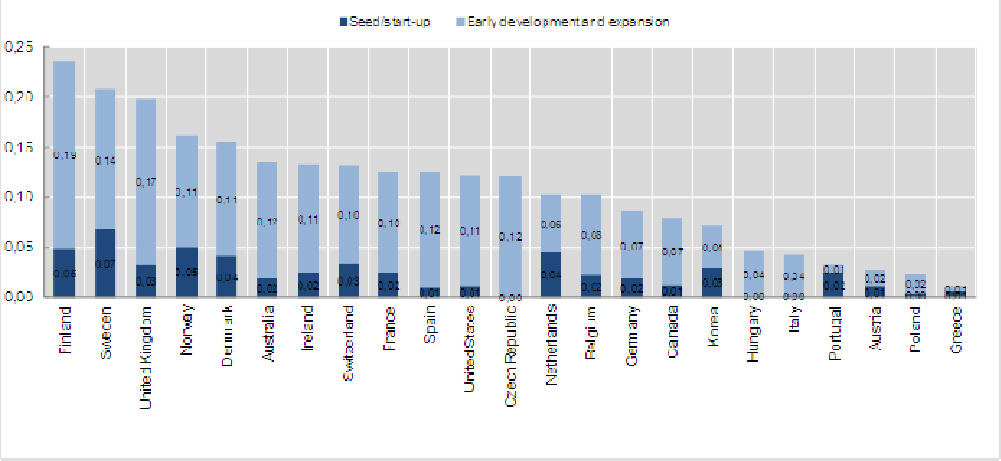

Figure 2. Venture capital investment as a percentage of GDP

Source: OECD (2009a)

Frontrunners present the highest levels of venture capital investment, especially on early development expansion. These countries also experiment more direct government funding for business R&D (figure 3).

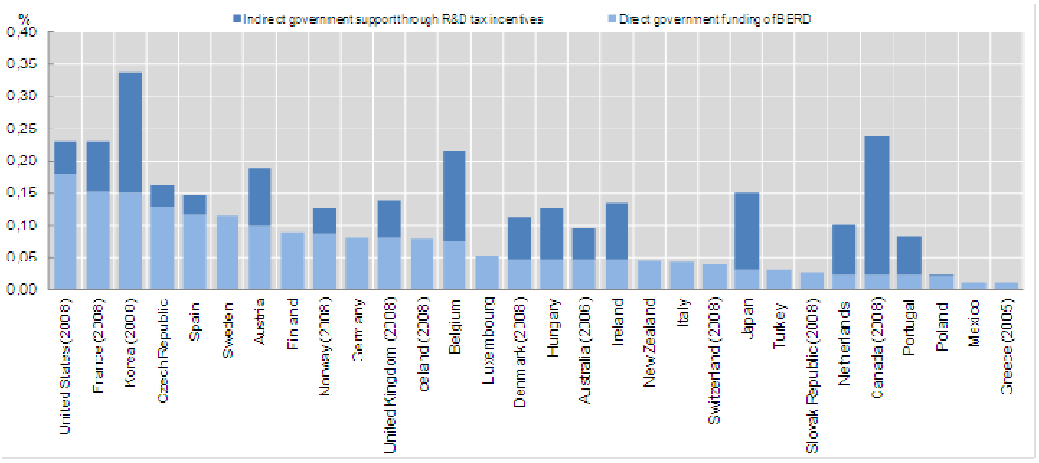

Figure 3. Direct and indirect government funding of business R&D and tax incentives for R&D as a percentage of GDP

Source: OECD (2010a)

And this historical path justifies the strength of their innovation systems and performance, such as for instance the level of broadband support extension (figure 4).

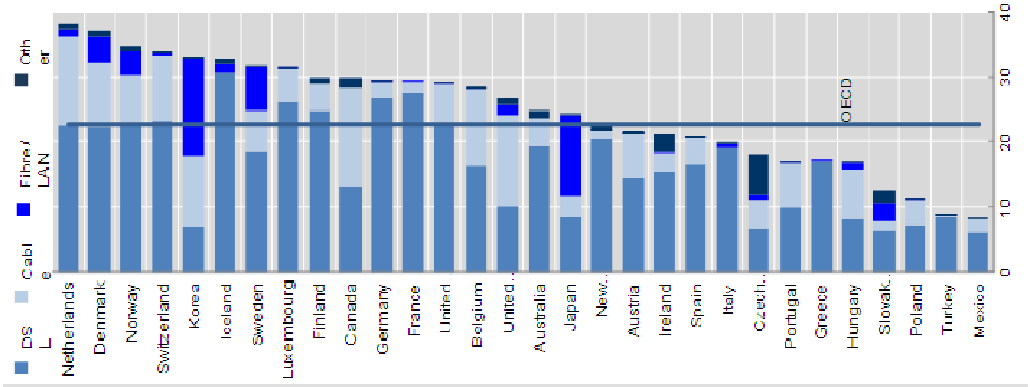

Figure 4. OECD broadband subscribers per 100 inhabitants, by technology

Source: OECD (2009c)

Another interesting aspect is that innovations in frontrunner countries reveal more cooperation (partnerships) among inventors from the same region, or other domestic regions, than among inventors from foreign countries (figure 5).

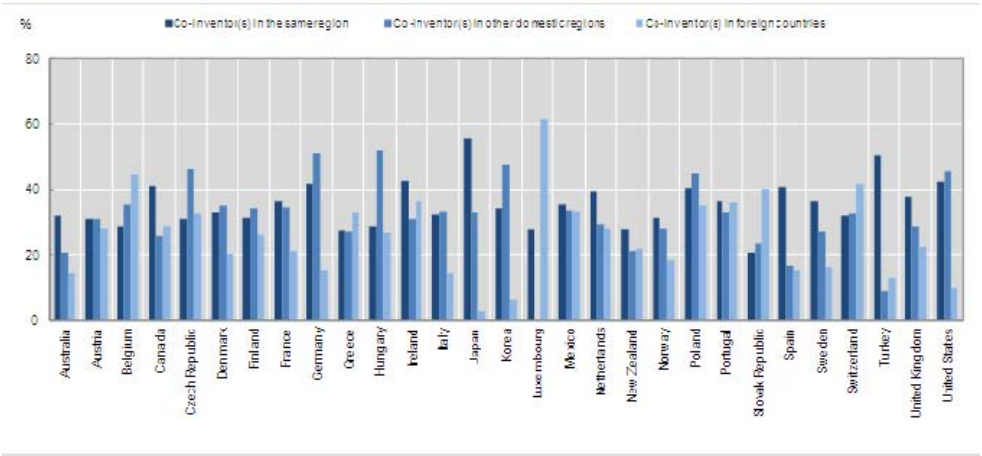

Figure 5. Regional average of PCT patents with co-inventor(s) by location as a percentage of all patents

Source: OECD (2010b)

Thus, these countries have been strengthening or empowering themselves (in resources, linkages, skills, etc.). According to population evolution (based on data from the United Nations), cities will increase being based in both virtual and physical proximities. European countries have to balance and plan this very well taking into account their resources and sustainability.

Even those frontrunners are the most attentive countries to current social and environmental stresses, as figure 6 shows for their higher levels of innovations on energy-efficient buildings/ lighting and renewable energy.

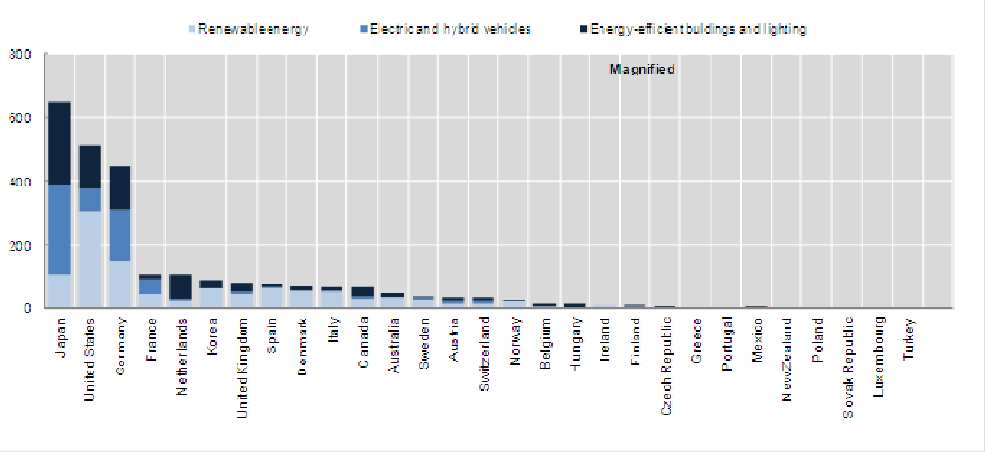

Figure 6. Patents for climate change mitigation technologies PCT patent applications

Source: OECD (2010c)

According to Kitching et al. (2009), policies can have important roles in countering the negative effects of crisis and contribute to resilient enterprises and economies:
- policies and strategies should aim at furthering new business models and new networks of firms with public research organizations;
- help firms' creation by facilitating local networks in which new firms have better access to investors, technology and information;
- redefine cross-sector initiatives, through cross-specialist linkages and partnerships, as policies are still rooted in traditionally defined sectors;
- governments could promote firms that have grown fast in previous economic downturns and build case studies of their successful strategies and ways of resisting;
- foster creative talent and areas of technological strength. Policies focusing on current social stresses - climate change, transformation of regions[52], and population ageing – could encourage new business opportunities.

5. Conclusion

From the results discussed, clearly the negative effects of the world economic crisis are remarkable. And they are not likely to diminish in the immediate future. As the catching up countries are the worst hit by the recession, this also affects the EU convergence process in innovation performance. This can seriously hinder the reduction of regional disparities which is today a key factor for the EU to compete with US and Asian economies (such as China and India). Another important issue to address is the impact of the global crisis at country's regional level. Is the crisis exacerbating regional disparities inside countries? This analysis could shed some light on the presence of a double-level divergence in innovation performance across countries. The availability of more data at the regional level describing the impact of current crisis would be useful (European Commission, 2010).

[52] According to the *Regional Innovation Scoreboard 2009* (European Commission, 2010).

Therefore, discussions of regional development are shifting from a focus on growth and development to a focus on the resilience of regional economies in response to rapid transitions in technologies, markets, and external economic shocks (Kanerva and Hollanders, 2009). This emphasis on sustainable regions rather than economic competitiveness will extend the research on learning regions to a broader conceptualization of embedded institutional adaptive capacities. Empirical evidence increasingly shows that institutional capacities and firm networks are more critical to the ability of regions to manage transitions (Treado and Giarratani, 2008). Agglomeration economies alone are not sufficient to guarantee the kind of ongoing innovation essential to firms' success facing shorter product cycles. Innovation increasingly requires a skilled creative regional labor market operating under entrepreneurial conditions (Gertler and Wolfe, 2002). Thus, resilience discussion emerges into the debate about the role of small firm innovation and entrepreneurship in developing long-run adaptive capacities in regions.

It remains to be seen how regions will be able to react since competencies, skills and knowledge are highly embedded in organizations, routines, workers' skills, capital goods. Another aspect to consider is: how will the economic environment be transformed by the crisis? New sectors can emerge as a result of new opportunities as well as of substantial public policies. An example is the "green industry" which is believed to be a fundamental source of innovation and development for the coming future (OECD, 2009b). The winners are more likely to be those which are equipped with both strong innovative infrastructures and domestic knowledge base. If these factors are not properly accounted by country's public and business policies, there is the risk of its national innovation system being substantially weakened undermining resilience and growth.

The fact that some structural characteristics of the NIS explain persistency of innovation, in response to major economic shocks, sheds some light on the behavior of firms during crisis and represents a step forward in terms of understanding the aspects underlying the relationship between macro and micro-determinants of innovation.

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