

Master Program in Innovation and Technological Entrepreneurship

Faculdade de Engenharia da Universidade do Porto

**The Role of the Municipalities within Regional Smart
Specialization Strategies: an Exploratory Study**

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Abstract

In the last few years, European Union (EU)'s regional policy discourse has included the smart specialization agenda as a central part of EU cohesion policy reform, considering its fundamental influence on the allocation of funds within the upcoming new program period of the EU's structural policy.

The premise of smart specialization requires each region build on its own strengths and to manage a priority-setting process in the context of national and regional innovation strategies. In smart specialization strategy definition and implementation is important that all relevant stakeholders (entrepreneurial actors) working together.

The municipalities are an important stakeholder in this process due to their competences and their role in the development and innovation of their region. Thus, the main purpose of this dissertation is to analyze the municipalities' awareness of the importance of smart specialization to regions and their role and activities performed (if any) in this process using the Portuguese municipalities as unit of analysis.

The large majority of municipalities are knowledgeable of policies of smart specialization strategy under Horizon 2020. But 50 in 110 municipalities (sample) are not involved yet in the process. Within the definition process of smart specialization strategies, municipalities develop activities such as: participation in meetings; promoter of workshops; people training; gathering of information (studies); benchmarking; and working groups to implement the strategies. The activities in which municipalities are more involved are “interlocutor with the entrepreneurs and/or business associations and/or professionals of the regions”, “supporting entrepreneurs in the management and dissemination of a network of mutual relations to boost the discovery process”, and “facilitator / promoter of incentives in terms of public place policies to the discovery of specializations”. Overall, “absence of human resources”, “need of human resources training”, and “scarce information from central government” are the constraints considered more severe in the implementation of smart specialization process.

Keywords: Smart Specialization Strategy; Innovation; Portuguese Municipalities; Regional Policy

JEL-Codes: O38; R11; R58

Resumo

Nos últimos anos, o discurso da política regional da União Europeia (UE) incluiu a especialização inteligente como uma parte central da reforma da política de coesão da UE, considerando a sua influência fundamental sobre a atribuição de fundos no âmbito do próximo período do programa de política estrutural da UE.

A premissa da especialização inteligente exige que cada região desenvolva os seus pontos fortes e gira um processo de definição de prioridades no contexto de estratégias nacionais e regionais de inovação. Na definição e implementação de estratégias de especialização inteligente é importante que todas as partes interessadas (atores empresariais) trabalhem juntas.

Os municípios são uma importante parte interessada neste processo devido às suas competências e ao seu papel no desenvolvimento e inovação da sua região. O objetivo principal deste trabalho é analisar a consciencialização dos municípios sobre a importância da especialização inteligente das regiões e do seu papel e das atividades (se houver) nesse processo, utilizando como unidade de análise os municípios portugueses.

A grande maioria dos municípios tem conhecimento das políticas da estratégia de especialização inteligente no âmbito do Horizonte 2020. Mas 50 em 110 municípios (amostra) ainda não estão envolvidos no processo. Dentro do processo de definição de estratégias de especialização inteligente, os municípios desenvolvem atividades como: participação em reuniões; promotor de *workshops*; formação de pessoas; recolha de informação (estudos); *benchmarking*; e grupos de trabalho para implementar as estratégias. As atividades nas quais os municípios estão mais envolvidos são: “interlocutor com os empreendedores e/ou associações de empresas e/ou profissionais das regiões”, “apoio aos empresários na gestão e difusão de uma rede de relações recíprocas para impulsionar o processo de descoberta” e “facilitador/promotor de incentivos em termos de políticas públicas à descoberta de especializações”. No geral, “falta de recursos humanos”, “necessidade de formação adicional e específica dos recursos humanos do município” e “escassa informação do governo central” são as restrições consideradas mais problemáticas na implementação do processo de especialização inteligente.

Palavras-chave: Estratégia de especialização inteligente; Inovação; Municípios Portugueses; Política Regional.

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1. Introduction

‘Smart specialization’ is currently gaining importance in the European Union (EU)’s regional policy discourse, since it will have a fundamental influence on the allocation of funds within the upcoming new program period of the EU’s structural policy (Benner, 2013).

The ‘smart specialization’ is a strategic approach towards economic growth through a specific support to research and innovation (R&I). This concept is based on the principle that the knowledge-resources’ concentration and its connections to a restricted number of specific economic activities will allow countries and regions to be competitive and stay competitive in the global economy (Benner, 2013).

The Europe 2020 strategy focus on three growth priorities: smart (effective investments in education, R&I); sustainable (low-carbon economy); and inclusive (job creation and poverty reduction) (Carayannis and Rakhmatullin, 2014). According to these priorities, the premise of smart specialization requires each region build on its own strengths and to manage a priority-setting process in the context of national and regional innovation strategies (European Commission, 2012).

Regions, by a smart specialization process, should concentrate their knowledge investments in certain areas of specialization. This applies to both economically strong and weaker regions. In the latter ones, smart specialization is a way to direct resources to areas that may produce a lasting impact on the regional economy (Foray et al., 2009). That means smart specialization is growth oriented. Instead of compensate weak regions, common practice so far, this kind of strategy promotes regional strengths within a perspective of growth of the specific chosen areas (Benner, 2013). The industries in which the regions have comparative advantages should be the target of specialized diversification and smart upgrading either through general-purpose applications technologies (GPT) or other innovation activities (Foray et al., 2012).

According to McCann and Ortega-Argilés (2011: 3),

The idea is that regional authorities can exploit the smart specialization logic by undertaking a rigorous self-assessment of a region’s knowledge assets, capabilities and competences and the key players between whom knowledge is transferred. This militates against recommending off-the-shelf local economic policy solutions and instead requires a careful analysis of regional. knowledge capabilities and research competences.

Smart specialization promotes a participatory fundamental perspective, combining top-down and bottom-up approaches and involving different regional agents (Benner, 2013).

Therefore, smart specialization offers a way of ensuring both empowerment of regional and local agents and their ownership of the process. These are important prerequisites for the sustainability and the effectiveness of regional economic strategies in the long term. (Benner, 2013: 4-5)

A key concept on smart specialization involves ‘an entrepreneurial discovery process’ that reveals what a country or region excel in terms of Research and Innovation (R&I) (Foray et al., 2009). The old approaches to the problem of prioritization and resource concentration involved formal exercises based on robust theories and were by their very nature largely technocratic. However, they despised the essential knowledge – the entrepreneurial knowledge, which combines and relates such science, technology, engineering, knowledge of market potential, competitors as well a whole set of inputs to a new activity (Foray et al., 2011).

According to Foray et al. (2011), the entrepreneurial process leads to the emergency of new knowledge related to the relevant specializations of the regions, stimulating the development of the regional economy, being for that considered of high social value.

Smart specialization should also enable potential synergies (economies of scope, spillovers) between already well-established branches of economic activity and others still underdeveloped ones, and promote emerging fields or radical foundation, as the discovery of a new niche potentially important in the region's economy (Foray et al., 2011).

The process of smart specialization involves choices in the areas considered the most promising. The selection of the areas should be made by dynamic “top-down” and “bottom-up” processes. The municipalities are an important stakeholder in this process (Ortega-Argilés, 2012), due to their competences and their role in the development and innovation of their region. The proximity of the citizens, the knowledge of the past and present of their region, their strengths and their role in public policy process and in helping to build relationships with others stakeholders with ‘responsibility’ on this process are factors that justify the pertinence to study the participation of municipalities in smart specialization process.

Thus, the main purpose of this dissertation is to analyze the municipalities’ awareness of the importance of smart specialization to regions and their role and activities performed (if any) in this process using the Portuguese municipalities as unit of analysis. Consequently, it intends to answer the following questions:

- In what extent local government is aware of the smart specialization?
- What are the perceptions of municipalities about their role in Regional Smart Specialization Strategy process and the current constraints?
- What are they doing within Regional Smart Specialization Strategy process?

In order to achieve that aim, we develop and implement a questionnaire survey targeting all municipalities of mainland Portugal.

The present dissertation is structured in five chapters as follows. The next chapter reviews the relevant literature on smart specialization, namely the emergence and concept of regional smart specialization (Section 2.1); smart specialization in practice based on the extant empirical literature (Section 2.2); and the role of government for smart specialization (Section 2.3). In Chapter 3, the methodological considerations are described. The presentation and the discussion of results are presented in Chapter 4. The last chapter is dedicated to the conclusions.

2. Literature Review

This chapter presents the synthesis of the relevant literature about smart specialization strategies, organised in three sections: the emergence and concept of (regional) smart specialization; smart specialization in practice; and the role of local government in smart specialization strategies.

2.1. The emergence and concept of (Regional) Smart Specialization

The smart specialization's concept has been developed in 2008 by a group of academic experts, with impact on the policy audience, particularly in Europe (Foray et al., 2009, 2011). This "policy concept" (Foray et al., 2011: 3) was adopted subsequently by expert groups of European Commission (EC) and EC reports (such as the Barca Report), which propose smart specialization as a way forward for future Cohesion policy (EC, '2010b), being now a key element of the European Union 2020 innovation plan (EC, 2010a, b).

The productivity gap and growth differentials between the United States and Europe and the awareness of important role that the adoption, dissemination, and the adaptation of new information and communications technologies play in this productivity gap are at the origin of smart specialization argument (Boschma, 2013; McCann and Ortega-Argilés, 2013). This emerged in response to Europe's productivity slowdown, emphasising the need of countries and regions to specialize in different knowledge-intensive industries that exploit their own capabilities and strengths (Boschma, 2013).

EC (2010b) recognises that be efficient in the allocation of the funding is a critical issue in the present crisis due the scarcity of private and public financial resources available. The recent past has often demonstrated an inefficiency of the regional innovation policies in identifying priorities for individual regions and manners of practical collaboration between regions; regional strategies have not been able to solve it, leading to a waste of public resources and hindering or delaying, the concretization of the potential societal gains (EC, 2010b).

The smart specialization strategies emerged from the awareness that most of the regional powers were applying mimetic approaches or policies, without taking into account the plurality and diversity of their backgrounds (Arangueci et al., 2012).

According to Foray et al. (2009), smart specialization is expected to create more diversity among regions rather than to stimulate regions to have mimetic behaviours. Effective

investment and a policy framework for the knowledge based society need to be fed by strategic intelligence that stimulates the competitiveness of regions through the identification of priorities in high-value added activities (EC, 2010b).

Foray et al. (2009: 20) present smart specialization as a strategy that aims “encourage investment in programs that will complement the country’s other productive assets to create future domestic capability and interregional comparative advantage”.

According to EC (2010b: 41), smart specialization “is about placing greater emphasis on innovation and focusing scarce human and financial RTDI resources in a few globally competitive areas in order to boost economic growth and prosperity”. It “is an alternative to a policy that spreads investment thinly across several areas and sectors irrespective of a region’s industrial structure and knowledge capacity (in terms of human capital, universities, research organisations and so on)”.

In turn, Organisation for Economic Co-operation and Development (OECD) (2013: 17) defines smart specialization as

an industrial and innovation framework for regional economies that aims to illustrate how public policies, framework conditions, but especially R&D and innovation investment policies can influence economic, scientific and technological specialisation of a region and consequently its productivity, competitiveness and economic growth path. [...] taking into account regional specificities and inter-regional aspects, and thus a possible way to help advanced OECD economies – as well as emerging economies- restart economic growth by leveraging innovation led/knowledge-based investments in regions.

So it is a regional policy framework for innovation driven growth (OECD, 2013). Smart specialization provides a strategy and a global role for every regional economy. So it is not just the “best” regions and technology leaders. While leader regions might invest in the invention of a generic technology, less advanced regions are often better advised to invest in the development of the applications of a generic technology or service innovation in one or several important areas of the regional economy or in developing cross-sectoral approaches (EC, 2010b).

According to Giannitsis (2009), smart specialization describes a successful fine-tuning of policies aiming the creation of innovative competitive units, clusters and/or regions; implies interventions and, therefore, some explicit or implicit targets linked to an deliberated concentration of resources in some form, requiring financial support mechanisms, which can originate substantial positive social externalities in the future; and assumes that there are criteria to assess which specializations and, consequently, which policy targets are smart.

Foray (2014) emphasizes the difference between smart specialization and smart specialization strategy (or policy). While the first is presented by the author as “a virtuous process of diversification through the local concentration of resources and competences in a certain number of new domains that represent possible paths for transformation of productive structures” (p.492), the latter “involves putting in place a political process aimed at facilitating this dynamic when it cannot develop spontaneously” (p.504).

In its conceptual building blocks, issues related to diversity, relatedness, connectivity and the entrepreneurial discovery processes are emphasized (Boschma, 2013; Georghiou et al., 2014; McCann and Ortega-Argilés, 2013).

The smart specialization strategy is a place-based approach; it is essentially a way of thinking about local knowledge enhancement and learning-enhancement systems (McCann and Ortega-Argilés, 2013). As pointed out by Boschma (2013), history matters. Regions have its own history, their own industrial, knowledge and institutional structures and consequently different growth potentials (Boschma, 2013). Based on those structural conditions and assuming that the development is a matter of transformation or change in the composition of the existing activities, there is some room to advance towards a specialized diversification and to build competitive edge (Navarro et al., 2012). Governments should focus their knowledge investments in activities that reflect areas where a region or country has some comparative advantage (specialization) or emerging areas where entrepreneurs could develop new activities (diversification) (OECD, 2013). McCann and Ortega-Argilés (2013: 7) also see it as a “specialized diversification”. It is not diversification per se that is important for growth, but the patterns of specialized diversification across related technologies that are important for growth (McCann and Ortega-Argilés, 2013). This connection between specialization and technological diversification in the context of regional development and growth has been highly influential as it demonstrated that the smart specialization as policy framework is very well suited for dealing with the problems of place-based growth (OECD, 2013; McCann and Ortega-Argilés, 2013).

The key input to the smart specialization is the entrepreneurial process of discovery (Foray et al., 2009: 2), which distinguishes it from traditional industrial and innovation policies. It is “a learning process to discover the research and innovation domains in which a region can hope to excel” (Foray et al., 2009: 2) and in which

entrepreneurial actors are likely to play leading roles in discovering promising areas of future specialisation, not least because the needed adaptations to local skills, materials, environmental conditions, and market access conditions are unlikely to be able to draw on codified, publicly shared knowledge, and instead will entail gathering localized information and the formation of social capital assets. (Foray et al., 2009: 2)

Smart specialization suggests a participatory fundamental perspective (Benner, 2013). It combines top-down and bottom-up approaches, considering a bidirectional iterative dynamic (Foray et al., 2011).

As pointed by Benner (2014), smart specialization is closely related to the cluster approach that has been intensively used in EU structural policy (and the EU's industrial and research policy) during recent years. While specialization is a broader notion than clustering, clusters can still be (and often are) major pillars of research and innovation strategies for smart specialization (RIS3). The EC (2010a: 7) states that clusters are an important element in smart specialization strategies, promoting a positive setting to drive competitiveness and innovation, especially concentrated on areas of comparative advantage.

The European University Association (2014), fostering the engagement of Europe's universities in RIS3, highlights the importance to include all relevant stakeholders in the definition and implementation of an RIS3 strategy. Government, universities and industry, considered the main agents of triple helix (see Carayannis and Rakhmatullin, 2014), should sit down together (European University Association, 2014). However, smart specialization platform promoted the Quadruple Helix approach, endorsed by the EC (2012), bringing together the civil society as a fourth pillar with the other three helixes (Carayannis and Rakhmatullin, 2014). This approach adopts a broad "entrepreneurial actors" concept, to embrace who have the potential to undertake entrepreneurial search processes and to develop innovations on the back of these search activities (McCann and Ortega-Argilés, 2014).

Based on Foray et al. (2012: 18), Feser (2014) summarises the creation of a regional smart specialization strategy in the four 'Cs': choice and critical mass – that is, prioritisation based on a region's unique strengths and the objective of international specialization in order to minimise duplication of target research and innovation clusters across the European Research area; competitive advantage, specifically the mobilisation of local talent and encouragement of local entrepreneurial discovery; connectivity and clusters, the latter 'arenas for related variety/cross-sector links internal in the region and externally';

and collaborative leadership – that is, the encouragement of public–private partnerships and the quadruple helix, thereby ‘giving voice to unusual suspects’.

The Figure 1 synthesizes the development process of smart specialization, which can occur in a spontaneous and decentralised way, as according to Foray (2014). The author presents these stylised facts as also difficulties that are not easily surmountable, often needing the implementation of a public policy (Foray, 2014).

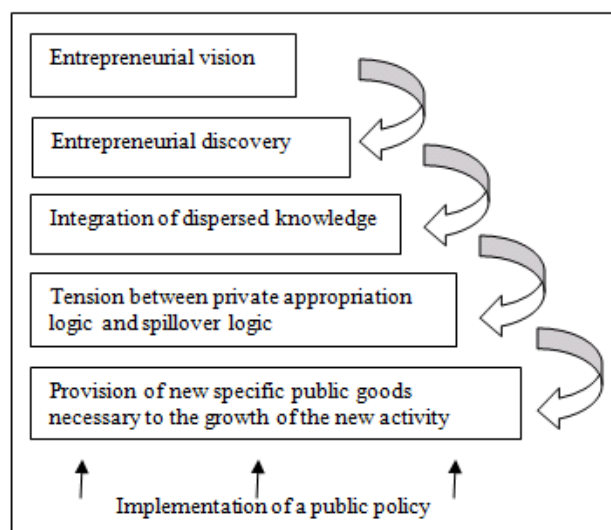


Figure 1. Synthesis of the development process of smart specialization and stylised facts

Source: Based on Foray (2014).

There is a consensus that centralised, top-down and “one-size-fits-all” policies are unrealistic for achieving regional smart specialization goals (McCann and Ortega-Argilés, 2014). Regional policies should focus on fostering local entrepreneurship and innovation and should be built on strategies which are realistic and appropriate to the regional context (McCann and Ortega-Argilés, 2014). The regional economic specifics, governance issues as well as variations in the regional economic conditions are in the basis of the smart specialization challenges faced by different regions (McCann and Ortega-Argilés, 2014). “This is because the possibilities for different regional actions depend heavily on the governance relationship between the regional and the local governance remits” (McCann and Ortega-Argilés, 2014: 409).

OCDE (2013) praises the intricate conceptual and policy implications of smart specialization, dividing them in three distinct areas: i) the core role of scientific, technological and economic specialization in the development of comparative advantage namely in promoting economic growth; ii) policy intelligence for recognizing main fields

of present or future comparative advantage; and iii) governance mechanisms that assign a central role to regions, private stakeholders and entrepreneurs in the process of converting specialization strategies into economic and social outcomes.

2.2. Smart Specialization in practice: an account of extant empirical literature

OECD (2013) report presents the findings of 15 case studies of country and regional experience in designing and implementing smart specialization strategies. Supported by this report, a summary on SSS in distinct regions is presented in Table 1. Its aim is to understand the chosen domains and the involved actor, particularly the role of the government.

These cases are generally characterized by implementation of a vertical policy¹ with the prioritization of fields/domains (OECD, 2013). Regional, national and international policies that have been decisive for prioritization of domains were analysed in what concerns to: governance system, key policy instruments, coordination activities and measuring the effects and impacts. Future development for smart specialization and lessons learned and conclusions for political action are presented. However, horizontal policies were not forgotten, when considered as drivers of development and growth of some sectors (OECD, 2013).

In these cases different stakeholders could be identified, with special role to universities (e.g., Auwera et al., 2013; Csank et al., 2013; Helleputte et al., 2013; Kardas and Mieszhowski, 2013; Lee, 2013; Seppo et al., 2013; van der Zee, 2013) and research and development institutions (e.g., Lee, 2013; Linshalm et al., 2013). It is highlighted that central (e.g., Quinn and Bampton, 2013; Seppo et al., 2013), regional (Auwera et al., 2013; Helleputte et al., 2013) and local (e.g., Csank et al., 2013; Eulenhöfer and Kopp, 2013; Quinn and Bampton, 2013; Vazquez and Ruiz, 2013) governments from the different places play an important role in the promotion and implementation of smart specialization strategy. The government participation mostly favours a hybrid policy, top-down and bottom-up.

¹ A vertical policy selects projects attending to preferred fields, sectors or technologies; a horizontal policy is only responding to demands that arise spontaneously from industry (Foray, 2014).

Table 1. Findings of case studies reported in OECD (2013)

Case	Domain/field	Aims	Principal Stakeholders	Other Stakeholders	Reported the Role of the Government	Type of approach (Top down/ bottom up/hybrid)
Australia (Quinn and Bampton, 2013b)	Grain s (Agriculture)	Innovation and productivity Australian agriculture	Grains research and Development corporation; Australian grain growers and Australian government	Grower groups, research partners	Central government	Bottom up
Australia, Melbourne (Quinn and Bampton, 2013a)	The South East Melbourne Innovation Precinct	Advanced manufacturing (networks, leading businesses and professionals hubs)	Australia National Science Agency	Monash University	Local government	Bottom up
Austria, Lower Austria (Breitfuss et al., 2013)	Develop Sustainable Industry Science Without lead industries	Infrastructure (scientific centers); R&D in manufacturing	Steering Committee RIS NÖ	Companies	Regional government	Top-down and bottom-up
Austria, Upper Austria (Linshalm et al., 2013)	Technology clusters, High education and technology networks	Mechatronics and process automation, innovative materials and ICT's (Triple helix)	Austrian Research & Technology Council	Leading companies	Regional government	Bottom up
Belgium, Flanders (Helleputte et al., 2013)	Nanotech - for - health	Cross - fertilization Flemish based health research and medical sectors	IMEC (Research Institute nano electronics) and VIB (another Institute)	Universities, academic hospitals, health sector and insurers	Regional government	Bottom up
Belgium, Flanders (Auwera et al., 2013)	Sustainable Chemistry	Cluster initiative (match scientific base and industry needs) - greening of society	FISCH (multisector business federation) and VITO (Public research Institute)	Universities	Regional government	Top-down and bottom-up
Czech Republic, South Moravia (Csank et al., 2013)	Specific industries: Mechanical engineering; electronics; ICT ; Life - Sciences	Shift from Foreign Direct Investments to endogenous approach: Functional priorities: Tech. Transfer; Services; Human resources; Internationalization	University	JIC (South Moravian Innovation Centre); Steering Committee	Regional government	Top-down and bottom-up
Estonia – Estonian R&I Strategies (Seppo et al., 2013)	Knowledge based economy; Key Technologies-traditional industry, energy, ICT's, Biotechnologies	Increase the capacity Estonian R&D on those fields	Ministry of R&D; Ministry of Economic Affairs and Communication	University of Tartu	Central government	Top-down
Finland, Lathi (Hermans, 2013)	From cluster to SS.		Tekes (Finnish Funding Agency T&I)	Regional Authorities; Technical Research Centre of Finland	Local government/ Municipalities	Top-down and bottom-up
Germany , Berlin and Brandenburg (Eulenhöfer and Kopp, 2013)	Five clusters: Healthcare, <energy Technology, Transport and Logistics, ICT and Optics)	International Competitiveness. Big Growth potential international scale	Fraunhofer and Max Planck Institutes, Universities	Associations and municipalities	Local government/ Municipalities	Top-down and bottom-up

Case	Domain/field	Aims	Principal Stakeholders	Other Stakeholders	Reported the Role of the Government	Type of approach (Top down/ bottom up/hybrid)
Korea, Gwangju (Lee, 2013)	Photonics Cluster	Optical communications and LED	Public Service agencies, Universities and Local Research Institutes		Central and Local government	Top-down
Netherlands, brainport Eindhoven (van der Zee, 2013)	Key Enabling Technologies (nano; Photonics; advanced materials and manufacturing systems)	"Business-driven"- Triple Helix Industry, Knowledge institutes and government	Universities and Leading Original Equipment manufactures (OEMs)	Research Institutes	Local government/ Municipalities	Top-down and bottom-up
Poland, Malopolska Region (Kardas and Mieszowski, 2013)	Key technologies - Areas: Energy, Life Science Cluster, ICT		Key regional Councils	Advisory bodies; Scientists and entrepreneurs	Regional government	Top-down and bottom-up
Spain, Andalusia (Vazquez and Ruiz, 2013)	Aerospace cluster	Innovation infra-structure - Empower capabilities in aeronautics	Regional and CATEC (Advance Centre for Aerospace Technologies)	Universities	Regional government	Top-down
Spain, Basque country (Zelaia, 2013)	RDI	Transition to sectors of High value added : Transport and mobility; nanoscience and advanced manufacturing	University of the Basque Country	Basque Council of STI's	Regional government	Top-down and bottom-up
Turkey, East Marmara	Automotive Cluster	Scientific and Tech infrastructure to work with and support automotive industry. Increase competitiveness (human resources) in all supply chain	Automotive Associations and Tubitak (R&D Institute) the sector	Universities	Central government	Top-down and bottom-up
United Kingdom (Hodges, 2013)	Automotive Industry	Transition to a low-carbon vehicles (environment protection and safety legislation)	NAITG(new automotive innovation and growth team)	Industry bodies and Academia	Central government	Top-down and bottom-up

Four case studies stress the local government engagement in the smart specialization process (e.g., Csank et al., 2013; Eulenhöfer and Kopp, 2013; Vazquez and Ruiz, 2013; Zelaia, 2013). Only in 3 cases it is directly mentioned the municipalities within local government institutions, namely: in Netherlands, Brainport Eindhoven (van der Zee, 2013); in Finland, Lathi (Hermans, 2013) (it presents “city authorities” expression); and in Germany, Berlin and Brandenburg (Eulenhöfer and Kopp, 2013), as a part of a broad social dialog between different stakeholders.

Other studies also present empirical cases of smart specialization strategies in different contexts, such as: Valdaliso et al. (2014) (Basque country), Georgiou et al. (2014) (Malta) and Baier et al. (2013) (Germany and Austria).

2.3. The role of local government in Smart Specialization strategies

According to Foray et al. (2009), public entities can play an important infrastructural role in smart specialization process. They can provide and collate pertinent information about emerging technological and commercial opportunities and obstacles, product and process safety standards both for domestic and foreign markets, and external sources of finance and distribution entities. They can also aid local entrepreneurs to manage and spread a network of mutual relationships and share knowledge that will boost this discovery process.

Foray et al. (2009: 23-24) highlight three main responsibilities of governments:

- Providing incentives to drive the discovery of the regions’ specializations by entrepreneurs and other organisations (higher education institutions, research laboratories, etc.):
- Monitoring the process evaluating and assessing its effectiveness preventing the waste of funding or cuts of funding too soon;
- Setting up complementary investments related to the emerging specializations (educational and training institutions, for instance) in regional investing, namely in the applications’ co-invention processes of a GPT.

In what concerns to local government, it has an important role in region’s level of economic, and social-cultural development, especially supported by the argument of the

decentralization of public policies, enabling the creation of a local economic climate and encouraging the development of the local potential (Teixeira and Barros, 2014a, b).

The structures of local or sub-regional governments play an important role in the process of smart specialization strategies primarily with respect to areas of public policies. The proximity to citizens and the necessary deepening of local and inter local autonomy generate a significant number of advantages in the decision, implementation, monitoring and evaluation of public policies, explained by the closer relationship between costs and benefits perceived by citizens (see OECD, 2013).

Also the increased interest in the public domain issues, the increased possibility of participation and involvement in the sphere of political decision and the ability to see the differentiation of public policies reflect the specific characteristics and preferences of each region are key elements to take into account. It is a question of valuation of proximity instruments of definition and implementation of public policies, including through the enhancement of municipal and inter-municipal scale, recognizing the territories as a tool, as a context and as a differentiated and determinant resource for the success of a strategy of smart growth, inclusive and sustainable.

The role of the government² described in OECD (2013) report is essentially as facilitator of the ‘discovery’ (e.g., Auwera et al., 2013; Hodges, 2013), rather than instigator of a new emerging field (e.g., Lee, 2013) and being the support by providing incentives, funding or removing regulatory constraints (e.g., Helleputte et al., 2013), creating “the necessary conditions, environment, dynamics and structures through which entrepreneurs and government learn about costs and opportunities and engage in strategic coordination” (OECD, 2013: 20). To support this assertion, Table 2 presents some extracts of the OECD (2013) case studies about the role of local government.

² According to OECD (2013: 202), “Government may be represented by any of the three levels of government and their owned corporations: National (federal), regional (state), and local (municipal).”

Table 2: The role of Local Government according to case studies reported in OECD (2013)

Case	The role of Local Government
Australia, Melbourne	“The broader MSE regional economic plan has also feed into this process by aligning economic priorities among local government bodies in the region. [...] Research organisations and government bodies can struggle to connect and establish working long term sustainable relationships with industry.” (Quinn and Brampton, 2013a: 98-99)
Germany , Berlin and Brandenburg	“The model is the result of a broad social dialog, in which a lot of citizens, associations, municipalities and politicians were involved. With this model both States agreed on a common development strategy. Representatives of the innovation and economic development agencies of Brandenburg and Berlin form the Cluster managements and coordinate the funding and support activities.” (Eulenhöfer and Kopp, 2013: 129-130)
Korea, Gwangju	“Photonics was the first industry promoted by the central and local governments and has strong potential to diversify and modernize local industry.” (Lee, 2013:81)
Netherlands, brainport Eindhoven	“The recent trend of decentralisation of government powers has resulted in a growing importance of the municipalities, especially in policy implementation (e.g. in social security and unemployment). Decentralisation has also increased the powers of the provinces, most importantly in regional-economic policy, nature management and spatial planning.” (van der Zee, 2013:73)
Poland, Malopolska Region	“One of the main goals of the regional authorities of the Małopolska Region is to engage citizens, especially scientists, students and entrepreneurs in the process of preparing and implementing <i>RIS 2013-2020</i> . The Marshal Office of the Małopolska Region delivers analytical and organisational support. Information about <i>RIS 2013-2020</i> was put into local and regional newspapers as well as via Internet.” (Kardas and Mieszowski, 2013: 138)

After the literature review, the next chapter is dedicated to methodological considerations.

3. Methodological considerations

This chapter presents and describes the methodological options, such as the research method and tools, the questionnaire design and the data collection process, and characterizes the population and sample.

3.1. Research method and tools

As mentioned previously, the main purpose of this dissertation is to analyze the municipalities' awareness of the importance of smart specialization to regions and their role and activities performed (if any) in this process using the Portuguese municipalities as unit of analysis. In line with this objective, it proposes to response the following research questions:

- In what extent local government is aware of the smart specialization?
- What are the perceptions of municipalities about their role in Regional Smart Specialization Strategy process and the current constraints?
- What are they doing within Regional Smart Specialization Strategy process?

In order to answer these questions, a quantitative methodological approach is adopted, where representativeness and reliability are essential topics when interpreting the data (Silva and Teixeira, 2012). This is an exploratory study.

Based on the literature review, especially on the role of local government reported by previous empirical studies, it was constructed a quantitative questionnaire survey targeting all 308 municipalities. Given that no public information on the issue is available, direct questionnaire is the adequate source for getting relevant information.

Portuguese municipalities have acquired over time a great historical, political, economic, administrative, financial and legal importance, revealing of pivotal significance in the context of local public decisions. This role of local government has known a considerable notoriety with the increasing transfer of powers and responsibilities to municipalities (Carvalho et al., 2014). Currently municipalities have competencies in the following domains as stated by Article 23 of Law No. 75/13 of 12 September): Rural and urban equipment; Energy; Transport and communications; Education; Heritage, culture and science; Free times and sports; Health; Social action; Housing; Civil protection; Environment and basic sanitation; Consumer protection;

Promotion of development; Territorial and urban planning; Municipal Police; and External Cooperation (Carvalho et al., 2014).

This research tool – the questionnaire - is used to: obtain knowledge of a population, its opinions and actions; to analyze a social phenomenon that is thought to be better grasped through collected information about individuals of the population; in cases where it is necessary to examine a large number of people (Quivy and Campenhoudt, 2005). So, questionnaire survey serves this dissertation purposes.

3.2. The questionnaire design

The questionnaire (see Appendix 1) was developed in Portuguese, considering the target respondents. The target respondents are the relevant interlocutors appointed by each municipality/ City Hall mayor.

The questionnaire comprises two parts. The first part addresses the characterization of respondents: the name of the Municipality, the first and last names of the respondent, function/ position in the Municipality, the department that the respondent belongs and its contact (email or telephone).

The second part consists of three major issues, which aim to assess, respectively: the municipality's knowledge about the policies of regional smart specialization strategy within the 2020 (Question 1); in the case of the municipality does not have knowledge, if it has already identified key domains, areas, sectors of specialization that benefit from smart specialization strategy and what they are, as well as the importance of the key interlocutors of the municipality (Question 2); and, in the case of the municipality has knowledge, if the municipality has been or is involved in the process of the definition of smart specialization strategies and hence what activities have been developed in this context, at what level the municipality is involved, as well as the other stakeholders, in the process and what is the severity of the constraints felt in implementing the smart specialization process (Question 3).

The questionnaire presents: closed-ended questions, which can be categorized as either single (as questions related to respondent characterization, where one response is required, dichotomous (Question 1, 3.1, where two response items are provided) and multichotomous (Questions 3.2, where several alternatives are listed); scaled-response questions, such as Questions 2.2 and 3.3, which use a scale to measure the attributes of the construct; and opened-ended questions, such as questions 2.2.1, 3.2.1, 3.4. and 3.5

(see Frazer and Lawley, 2000). The scaled-response questions are design as a Likert scale of five categories.

Based on Frazer and Lawley (2000), Table 2 presents the links between the different stages of the research process.

Table 2. Links between stages of the research process

Research questions	Relevant questions of the questionnaire	Proposed analysis technique
In what extent local government is aware of the smart specialization?	Q1. Q2.1 Q3.1	Frequencies, percentages and appropriated tests
What are the perceptions of municipalities about their role in Regional Smart Specialization Strategy process and the current constraints?	Q2.2 Q3.3 Q3.4 Q3.5	
What are they doing within Regional Smart Specialization Strategy process?	Q3.2 Q3.4	

3.3. Data collection

The questionnaire was sent to all 308 municipalities, with a cover letter (see Appendix 2), addressed to the respective mayors, by the email EIMP@fep.up.pt exclusively created for this research. The submission of the questionnaire was preceded by the collection of institutional emails (of the mayors' office, of the office that support the mayor or the general email) of the Portuguese municipalities, in their websites or in the website of the Ministry of Internal Affairs. In addition, it was used the Google Forms platform to insert the questionnaire.

The submission was made from March 26th to 31th, 2015, requesting response via Google Forms platform, fax, email or phone until the 8th of April 2015. However, by that date, the response rate was manifestly insufficient, so it a new email request was sent from April 16th to 19th with a new deadline of April 24th. Later, during the month of May, telephone contacts were made with the municipalities that had not yet responded, reiterating the call for its collaboration and a new request was re-sent sent by email.

The contacts were closed on May 31th, 2015, however it was considered the responses received until July 17th, 2015, which totaled 110 responses received. The majority of the answers (108) was received by the platform; one municipality sent the responses by

email and another one answered the questionnaire by telephone. Figure 2 summarizes the process of data collection.

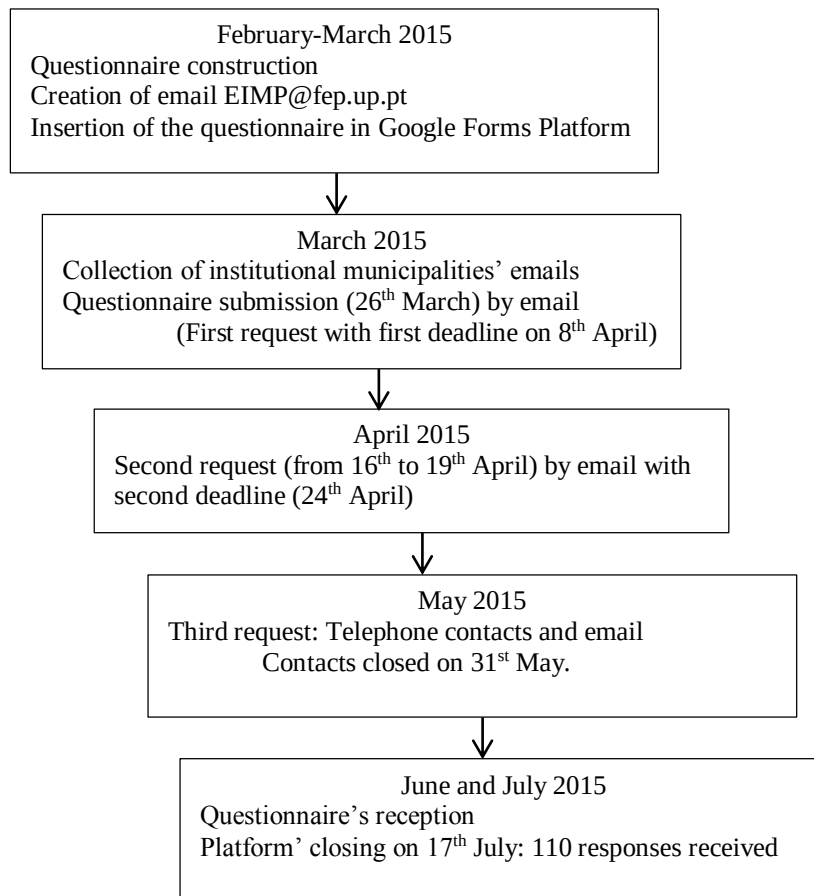


Figure 2. Process of data collection

The gathered data by the questionnaire, based on pre-codified answers, was then analysed statistically by SPSS software.

3.4. Population and sample

There are 308 municipalities in Portugal, including 278 in mainland and 30 in Azores and Madeira. Giving that the most often used criterion to classify municipalities' size still takes into account the number of inhabitants, Carvalho et al. (2014) grouped the Portuguese municipalities in three different categories by their size measured in number of inhabitants:

- Small municipalities: population with lower or equal to 20 000 inhabitants;
- Medium municipalities: with more than 20 000 inhabitants and less than or equal to 100 000 population;

- Large municipalities: with a population of 100,000 inhabitants.

Considering this categorization, the number of Portuguese's municipalities in 2013 was distributed as follows: 184 small, 100 medium and 24 large, with the following geographical distribution taking into account the NUTS II classification (Table 3).

Table 3. Number of Municipalities by size and NUTS II classification

Population	North	Centre	Lisbon	Alentejo	Algarve	Azores	Madeira	Total
Small	46	63	1	45	7	15	7	184
	53%	63%	6%	78%	44%	79%	64%	60%
Medium	30	35	6	13	9	4	3	100
	35%	35%	33%	22%	56%	21%	27%	32%
Large	10	2	11	0	0	0	1	24
	12%	2%	61%	0%	0%	0%	9%	8%
Total	86	100	18	58	16	19	11	308
	100%	100%	100%	100%	100%	100%	100%	100%

Source: Carvalho et al. (2014, p.21), adapted.

In the North, 53% (46) of the 86 municipalities are small, 35% (30) are medium and 12% (10) are large. In the Centre, 63% (63) of the 100 municipalities are small, 35% (35) are medium and 2% (2) are large. The highest percentage of large municipalities is in the Lisbon region; 6% (1) of the 18 municipalities are small, 33% (6) are medium and 61% (11) are large. In the Alentejo, 78% (45) of the 58 municipalities are small, 22% (13) are medium and none is considered large. In Algarve, 44% of the 16 municipalities are small, 56% are medium, with the largest percentage of medium-sized municipalities by NUT II, and once again there are not large municipalities in this region. In the Azores, 79% (15) of the 19 municipalities are small, i.e., this region has the highest percentage of small municipalities, and 4 (21) are medium. Finally, in Madeira, 64% (7) of the 11 existing municipalities are small, 27% (3) are medium and 9% (1) are large.

Table 4 shows a similar characterization of the sample, which comprises the respondent municipalities (n= 110), i.e., the response rate is 36% (110/308).

By size, the 110 municipalities are mostly small (59%; n = 65); only 32% (n = 35) are medium and 9% (n = 10) large.

Considering the NUTS II classification, 45 (41%) of the sample's municipalities belong to the Centre region, 28 (25%) to North, 22 (20%) to the Alentejo, 6 (5%) to the Algarve, 4 (4%) to the Lisbon region, 3 (3%) to the Azores and 2 (2%) to the Madeira region.

Table 4. Respondent municipalities (sample) by size and NUTS II classification

Sample	North	Centre	Lisbon	Alentejo	Algarve	Azores	Madeira	Total
Small	13 46%	29 64%	0 0%	18 82%	2 33%	2 67%	1 50%	65 59%
Medium	11 39%	14 31%	1 25%	4 18%	4 67%	1 33%	0 0%	35 32%
Large	4 14%	2 4%	3 75%	0 0%	0 0%	0 0%	1 50%	10 9%
Total	28	45	4	22	6	3	2	110
Of each NUT II	100%	100%	100%	100%	100%	100%	100%	100%
Of the 7 NUTS II	25%	41%	4%	20%	5%	3%	2%	100%

Of the 28 respondent municipalities from North, 46% (13) are small, 39% (11) are medium and 14% (4) are large. In the Centre region, 64% (29) of the sample's municipalities are small, 31% (14) are average and 4% (2) are large. In the Lisbon region, 25% (1) of the 4 sample's municipalities are medium and 75% (3) are large. In Alentejo, 82% (18) of the 22 municipalities are small and 18% (4) are medium. Two (33%) of the 6 respondent municipalities from Algarve are small and 4 (67%) are medium. The three municipalities from Azores, 2 (67%) are small and 1 (33%) is medium. Finally, the two municipalities in the Madeira region belonging to the sample, one is small and the other is large.

Tables 5 and 6 present the comparison between population and sample based on NUTS II criterion and combining size and NUTS II classification, respectively.

Table 5. Sample versus Population by NUTS II classification

NUTS II	Population	% of Population	Sample	% of Sample
Alentejo	58	18.80%	22	20.00%
Algarve	16	5.20%	6	5.45%
Centre	100	32.50%	45	40.91%
North	86	27.90%	28	25.45%
Lisbon	18	5.80%	4	3.64%
Madeira	11	3.60%	2	1.82%
Azores	19	6.20%	3	2.73%
Grand Total	308	100.00%	110	100.00%

All of the large municipalities from Centre and Madeira regions answered the questionnaire, explaining the 100% rate. The other percentages shown in Table 6 are lower than or equal to 50%.

Regarding to all small municipalities, only 35% answered the questionnaire. This percentage is equal to the medium size municipalities (35%), and slightly higher for large municipalities (42%).

However, considering only the NUTS II classification, the percentages range from 16% in the Azores and 45% in the Centre.

Table 6. Sample versus Population by size and NUTS II classification

Sample/Population	North	Centre	Lisbon	Alentejo	Algarve	Azores	Madeira	Total
Small	28%	46%	0%	40%	29%	13%	14%	35%
Medium	37%	40%	17%	31%	44%	25%	0%	35%
Large	40%	100%	27%	-	-	-	100%	42%
Total	33%	45%	22%	38%	38%	16%	18%	36%

Combining the two dimensions (size and NUTS II), the proportion of small municipalities of the sample in the totality of small municipalities by NUTS II ranges from 0% (Lisbon) and 46% (Centre); for the medium-sized municipalities, the interval is similar, ranging from 0% (in Madeira) to 44% (in Algarve); for large municipalities, the sample covers a larger part of the population by NUTS II, however presenting a greater range: 27% in Lisbon and 100% in Centre and Madeira regions.

Table 7 presents the comparison between population and sample based on NUTS III criterion.

Table 7. Population versus sample by NUTS III classification

NUTS III	Population	% of Population	Sample	% of Sample
Alentejo Central	14	4.5	8	7.3
Alentejo Litoral	5	1.6	1	0.9
Algarve	16	5.2	6	5.5
Alto Alentejo	15	4.9	5	4.5
Alto Minho	10	3.2	3	2.7
Alto Tâmega	6	1.9	3	2.7
Área Metropolitana de Lisboa	18	5.8	4	3.6
Área Metropolitana do Porto	17	5.5	5	4.5
Ave	8	2.6	4	3.6
Baixo Alentejo	13	4.2	6	5.5
Beira Baixa	6	1.9	3	2.7
Beiras e Serra da Estrela	15	4.9	5	4.5
Cávado	6	1.9	2	1.8

NUTS III	Population	% of Population	Sample	% of Sample
Douro	19	6.2	3	2.7
Lezíria do Tejo	11	3.6	2	1.8
Médio Tejo	13	4.2	9	8.2
Oeste	12	3.9	5	4.5
Região Autónoma da Madeira	11	3.6	2	1.8
Região Autónoma dos Açores	19	6.2	3	2.7
Região de Aveiro	11	3.6	3	2.7
Região de Coimbra	19	6.2	10	9.1
Região de Leiria	10	3.2	5	4.5
Tâmega e Sousa	11	3.6	6	5.5
Terras de Trás-os-Montes	9	2.9	2	1.8
Viseu Dão-Lafões	14	4.5	5	4.5
Total	308	100.00%	110	100.00%

In order to determine whether the conclusions drawn from this study can be applied to all Portuguese municipalities, the sample is analyzed as to its representativeness by size and NUTS II and NUTS III classifications. To test the representativeness, it was used the chi-square adherence test, whose the null hypothesis assumes that the sample is representative of the population and it is not rejected to $p\text{-value} > 0.05$. The results of the tests are presented in Table 8.

Table 8. Sample Representativeness tests

Representativeness by	N	n	Chi-square	Significance level
Size (Small, Medium, Large)	308	110	0.261	0.878
NUTS II classification	308	110	6.720	0.348
NUTS III classification	308	110	19.371	0.732

Considering the results of the Chi-square tests to representativeness, the sample is representative of the population in what concerns to size, NUTS II and NUTS III classification ($p\text{-values} > 0.05$). So the conclusions can be extrapolated to the population according those criteria.

The next chapter presents the results of the empirical study.

4. Results of Empirical Analysis

This chapter is organized in two sections: characterization of the respondents and the analysis of the responses. The aim of this chapter is present the empirical analysis, in order to answer the research questions of this dissertation.

4.1. Characterization of the respondents

Considering the first part of the questionnaire, and to safeguard the confidentiality of respondent data, the characterization of the respondents is only based on their position, function or hierarchical level in the municipality. The answers are systematized in Table 9.

Table 9. Respondent's function/ position in the Municipality

Function/Position	No. Respondents
Adjunct of the Mayor or Mayor support office	8
Alderman	6
Assessor	2
Computer expert	3
Department manager	6
Head of division/team/office/service	25
Mayor (President)	12
Member of the Mayor support office	2
Secretary of the Mayor or Mayor support office	5
Senior Technician	37
Technical coordinator	1
Vice president	2
Other: local elected	1
Total	110

Of the 110 respondents, 37 declare to be senior technicians, 25 heads of division/team/office/service and 12 mayors. These three categories of functions represent 67% of the sample.

4.2. Analysis of the responses

This section analyses sequentially the answers to the questions of the questionnaire.

Regarding the question 1 “Does the municipality has knowledge about the policies of regional smart specialization strategy under Horizon 2020?” (“O município tem conhecimento das políticas da estratégia de especialização inteligente regional no âmbito do Horizonte 2020?”), Table 10 shows the frequencies of the responses.

Table 10. Municipality's knowledge about the policies of regional smart specialization strategy under Horizon 2020 (Q1)

	Frequency	Percent	Cumulative Percent
No	18	16.4	16.4
Yes	92	83.6	100.0
Total	110	100.0	

Ninety two municipalities of the 110 respondent municipalities (83.6%) claim to be knowledgeable of smart specialization strategy's policies. The remaining 18 municipalities (16.4%) answered that they does not know these policies.

Table 11 presents the results of the answers to Q1 by municipality's size and the Fisher's exact test. We use the Fisher's exact test because we want to conduct a chi-square test, but one or more cells have an expected frequency of five or less.

Table 11. Q1 by municipality's size

Q1	Size			Total
	Large	Medium	Small	
No	0	6	12	18
Yes	10	29	53	92
Total	10	35	65	110

Fisher's exact= 0.458

All large respondent municipalities have knowledge about the policies of regional smart specialization strategy under Horizon 2020; 17% (6 in 35) of medium size respondent municipalities have not knowledge about the policies of regional smart specialization strategy under Horizon 2020; and this percentage is slightly higher to small size respondent municipalities (18.5%; 12 in 65).

We find that there is no statistically significant relationship between the variables, municipality's knowledge about the policies of regional smart specialization strategy under Horizon 2020 and municipality's size (*Fisher's exact= 0.458*)

Table 12 considers the answers to Q1 by NUTS II and the Fisher's exact test.

Table 12. Q1 by NUTS II

Q1	NUTS II							Total
	Alentejo	Algarve	Centre	Lisbon	North	Azores	Madeira	
No	4	0	8	0	3	1	2	18
Yes	18	6	37	4	25	1	1	92
Total	22	6	45	4	28	2	3	110

Fisher's exact= 0.176

All respondent municipalities that belong to Algarve and Lisbon have knowledge about the policies of regional smart specialization strategy under Horizon 2020.

However, two of the three respondent municipalities of Madeira have not knowledge about the policies of regional smart specialization strategy under Horizon 2020. This proportion is lower to NUTS II of Azores (50%); Centre (18%); Alentejo (18%); and North (10.7%).

We find that there is not statistically significant relationship between municipality's knowledge about the policies of regional smart specialization strategy under Horizon 2020 and NUTS II (*Fisher's exact*= 0.176).

The municipalities that have no knowledge about such policies were invited to answer the question 2. Table 13 shows the frequencies of the responses to the question 2.1 “Has municipalities identified key domains /areas/sectors of specialization that would benefit from smart specialization strategy?” (“O município tem já identificados domínios/áreas/setores de especialização chave que beneficiariam da estratégia de especialização inteligente?”).

Table 13. Existence of key domains/areas/sectors of specialization already identified that would benefit from smart specialization strategy (Q2.1)

	Frequency	Percent	Percent Sample (n=110)
No	13	72.2	11.8
No, but the identification is in process	5	27.8	4.5
Yes	0	0	0
Total	18	100.0	

The majority of municipalities that have not knowledge about SSS policy, when asked about if they have already identified key specialization fields / areas / sectors that could benefit from smart specialization strategy, said no (13 municipalities, 72.2%, corresponding to 11, 8% of the sample). Only 5 in 18, i.e., 27.8% (corresponding to 4.5% relative to the total sample) assumed that the identification in process.

Once again, Table 14 presents the answers of Q2.1 by municipality's size, as well as the Fisher's exact test.

None of the eighteen municipalities that answered to Q2.1 are considered large. Fifty percent of small of small municipalities that answered to Q2.1 state that the identification is in process. Considering the medium size municipalities, this percentage is lower (16.7%).

Table 14. Q2.1 by municipality's size

Q2.1	Size		Total
	Medium	Small	
No, but the identification is in process	1	4	5
No	5	8	13
Total	6	12	18
Fisher's exact= 0.615			

We find that there is not statistically significant relationship between the existence of key domains/areas/sectors of specialization already identified that would benefit from smart specialization strategy and municipality's size (*Fisher's exact*= 0.615).

Table 15 shows the answers to Q2.1 by NUTS II. The five municipalities that responded "No, but the identification is in process" belongs to: Alentejo (1), Centre (3) and Madeira (1).

Table 15. Q2.1 by NUTS II

Q 2.1	NUTS II					Total
	Alentejo	Centre	North	Azores	Madeira	
No, but the identification is in process	1	3	0	0	1	5
No	3	5	3	1	1	13
Total	4	8	3	1	2	18
Fisher's exact= 0.784						

Once again, we find that there is not statistically significant relationship between the existence of key domains/areas/sectors of specialization already identified that would benefit from smart specialization strategy and NUTS II (*Fisher's exact*= 0.784).

Since none of these 18 municipalities claimed to have identified key areas or sectors, there was no response to question 2.1.1 "If you answered yes to Question 2.1, please specify."

Considering the question 2.2 "In the context of regional policy implementation, indicate what would be the importance of the key interlocutors of the municipality" (No âmbito da implementação da política regional, indique qual seria a importância dos interlocutors chave do município", Table 16 summarizes the responses.

Table 16. Importance of the municipality's key interlocutors within the regional policy implementation (Q2.2)

	CCDR		Professional Associations		Commercial/ industrial Associations		Research Institutes		Reference Company		Others	
	n	%	n	%	n	%	n	%	n	%	n	%
Nothing important	2	11.1%	3	16.7%	3	16.7%	2	11.1%	2	11.1%	12	66.7%
Little important	-		4	22.2%	-		-		-		1	5.6%
Some important	-		-		3	16.7%	2	11.1%	5	27.8%	2	11.1%
Important	7	38.9%	10	55.6%	10	55.6%	8	44.4%	8	44.4%	3	16.7%
Very important	9	50.0%	1	5.6%	2	11.1%	6	33.3%	3	16.7%	0	0.0%
Total	18	100.0%	18	100.0%	18	100.0%	18	100.0%	18	100.0%	18	100.0%

CCDR: *Comissão de Coordenação e Desenvolvimento Regional* (Commission for Regional Coordination and Development)

In general the presented interlocutors (CCDR, professional associations, commercial/industrial associations, research institutes, and reference company) are considered as important in the context of regional policy (except for “Other”). Thus, Table 17 considers only the answers “Important” and “Very Important” in an aggregated way, with its absolute and relative frequency.

Table 17. Municipality's key interlocutors (important and very important)

Important and very important	CCDR	Professional Associations	Commercial/ industrial Associations	Research Institutes	Reference Company	Others
Number of answered	16	11	12	14	11	3
Group % (n=18)	88.9%	61.1%	66.7%	77.8%	61.1%	16.7%

Among the interlocutors important, we can highlight CCDRs (88.9%), followed by Research Institutes (77.8%), Commercial/Industrial Associations (66.7%), Professional Associations and reference companies (both with 61.1%). In “Others”, 3 municipalities emphasize the importance of the following entities: municipal company; *Turismo de Portugal*; and Unions and Workers Associations, thus responding to the question 2.2.1. It is also noted a municipality which mentions the professional schools, but giving them little importance.

The 92 municipalities that state to be knowledgeable of smart specialization strategy policies responded to Question 3, specifically, to the question 3.1 "Was/Is the municipality involved in the definition process of smart specialization strategies?" (O município esteve/está envolvido no processo de definição de estratégias de especialização inteligente?). Table 18 shows the frequency of responses.

Table 18. Municipality's involvement in the definition process of smart specialization strategies (Q3.1)

	Frequency	Percent	Cumulative Percent
No	32	34.8	34.8
Yes	60	65.2	100.0
Total	92	100.0	

Among municipalities who know SSS, 65.2% (60 municipalities) declare they are involved in the definition of SSS. However, more than one third of the sample (32 municipalities, which account for 34.8% of the knowledgeable group) says is not involved.

Adding 18 municipalities that say ignore the SSS to these 32 municipalities, there are 50 municipalities in 110 (sample) who apparently are not linked to this process, i.e., 45.45% of municipalities do not participate in SSS processes. Combining the answers to question 2.1 with the answers to question 3.1, the following map summarizes the results (Figure 3).

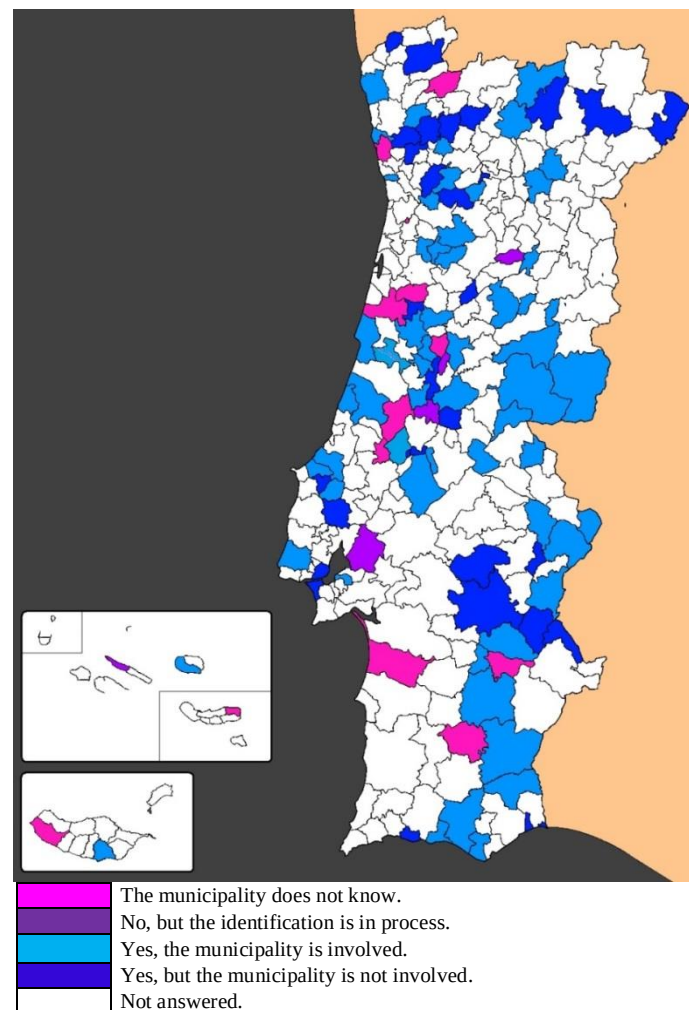


Figure 3. Municipalities' participation in SSS

Then we associate the answers to Q3.1 with municipality's size and use Fisher's exact test (see Table 19).

Table 19. Q3.1 by municipality's size

Q3.1	Size			Total
	Large	Medium	Small	
No	4	10	18	32
Yes	6	19	35	60
Total	10	29	53	92
Fisher's exact= 0.950				

The sixty municipalities that say they are involved in the definition of SSS, 6 are large, 19 are medium and 35 are small. Considering the respondent municipalities to Q3.1, 40% of large municipalities, 35% of medium municipalities and 34% of small municipalities that know SSS are not involved in that process.

The results of Table 19 suggest that there is not a statistically significant relationship between the answers to Q2.1 and the size of the municipality (*Fisher's exact*=0.95).

Table 20 presents the answers of Q3.1 by NUTS II.

Table 20. Q3.1 by NUTS II

Q 3.1	NUTS II							Total
	Alentejo	Algarve	Centre	Lisbon	North	Azores	Madeira	
No	6	2	9	2	13	0	0	32
Yes	12	4	28	2	12	1	1	60
Total	18	6	37	4	25	1	1	92
Fisher's exact= 0.319								

Once again, the results of Table 20 suggest that there is not a statistically significant relationship between the answers to Q3.1 and the NUTS II (*Fisher's exact*= 0.319).

Considering the question 3.2, "What activities have been developed in this area by the municipality? (Please select the relevant options)" ("Que atividades têm sido desenvolvidas neste âmbito pelo município? (Por favor marque as opções que entender relevantes)"), the summary of the answers and the results of the Independent Samples Kruskal-Wallis test (involved versus not involved) by each group of activities are presented in Table 21.

Table 21. Developed activities by Municipalities within the definition process of smart specialization strategies (Q3.2)

Activities	Total Mean (# 92)	Involved group (# 60)	Non- involved group (#32)	p-value (Kruskal-Wallis Test)	Decision
1. Participation in meetings	57.6	78.3	18.8	0.000	Reject the null hypothesis
2. Promoter of workshops	22.8	25.0	18.8	0.490	Retain the null hypothesis
3. People training	18.0	26.0	3.0	0.008	Reject the null hypothesis
4. Gathering of information (studies)	48.9	56.7	34.4	0.043	Reject the null hypothesis
5. Benchmarking	28.3	33.3	18.8	0.141	Retain the null hypothesis
6. Working groups to implement the strategies	41.3	55.0	15.6	0.000	Reject the null hypothesis
7. Others	-	-	-	-	

Asymptotic significance are displayed. The significance level is 0.05.

With regard to involved municipalities in the definition process of smart specialization strategies (60 municipalities), the principal activities are: participation in meetings (78.3%); gathering of information (studies) (56.7%) and working groups to implement the strategies (55%). The 32 municipalities that are not involved, as expected, have lower frequencies in the all presented activities; however, the main activity is the gathering of information (studies) (34.4%). Overall (92 municipalities), we can stand out positively the participation in meetings and the gathering of information (studies), and less positively the people training activity.

Considering the p-value of *Kruskal-Wallis* test, whose the null hypothesis assumes that the distribution of each activity of Q3.2 is the same across categories of Q3 group (involved and non-involved), the null hypothesis is rejected to activities 1, 3, 4, and 6, and it is retained to activities 2 and 5. There are significant differences between the involved and non-involved groups in what concerns to participation in meetings, people training, information collection (studies) and strategies implementation's groups; and there are not significant differences between the involved and non-involved groups regarding to workshop promoter and benchmarking.

As responses to question 3.2.1 "If you selected 'Participation in meetings', please indicate with whom" (Se selecionou 'Participação em reuniões', por favor, indique com

que Entidades”), several municipalities stand out the inter-municipal Communities (CIM), the CCDR, the Secretary of State, regional development institute, business associations and research institutes.

On the question 3.2.2 “If you selected ‘Other’, please specify the most relevant” (Se seleccionou “Outras”, por favor, especifique as mais relevantes”, the inter-municipal communities are highlighted.

Regarding the question 3.3 “Municipality’s involvement degree in various activities of the smart specialization process” (“Grau de envolvimento do município em diversas actividades do processo da especialização inteligente regional”), the summary of the answers and the results of the *Independent Sample Kruskal-Wallis test* (involved and non-involved groups) by each group of activities, are presented in Table 22. Considering the Likert scale used of five categories (“nothing involved”, “little involved”, “some involved”, “involved” or “too involved”), the options “involved” and “too involved” are aggregated as well as the other three options (“nothing involved”, “little involved”, “some involved”), creating dummy variables, assuming the value 1 if the involvement level is “involved” or “too involved”, and 0 if the involvement level is “nothing involved”, “little involved” or “some involved”.

Table 22. Municipality’s involvement degree in various activities of the smart specialization process (Q3.3)

Activities	Total Mean (# 92)	Involved group (# 60)	Non-involved group (#32)	p-value (Kruskal-Wallis Test)	Decision
1. Facilitator / promoter of incentives in terms of public local policies to the discovery of specializations - supporting the Horizon 2020 applications	42.39	55.00	18.75	0.001	Reject the null hypothesis
2. Interlocutor with the entrepreneurs and/or business associations and/or professionals of the regions	55.43	68.33	31.25	0.001	Reject the null hypothesis
3. Supporting entrepreneurs in the management and dissemination of a network of mutual relations to boost the discovery process	45.65	56.67	25.0	0.004	Reject the null hypothesis
4. Relevant information's agglutinant on emerging opportunities, products, and safety standards of the process	35.87	48.33	12.5	0.001	Reject the null hypothesis
5. Promoter of complementary investments related to emerging specializations, primarily training people.	35.87	45.00	18.75	0.013	Reject the null hypothesis
6. Influencer of the choice of specializations by supra-regional entities.	33.70	41.67	18.75	0.028	Reject the null hypothesis
7. Monitoring.	23.91	35.00	3.13	0.001	Reject the null hypothesis

Asymptotic significances are displayed. The significance level is 0.05.

As expected, the percentages/frequencies for all presented activities are frankly higher for the involved group compared to the non-involved group. To the involved group, the activities “Interlocutor with the entrepreneurs and/or business associations and/or professionals of the regions” (68.33%; 41 of 60), “Supporting entrepreneurs in the management and dissemination of a network of mutual relations to boost the discovery process” (56.67%; 34 municipalities of 60) and “Facilitator / promoter of incentives in terms of public place policies to the discovery of specializations - supporting the Horizon 2020 applications” (55%; 33 municipalities of 60) present higher municipalities' involvement. The activity of lesser involvement is “Monitoring”. For the group of non-involved municipalities, the greater involvement activities and the activity of lesser involvement are the same of the involved group.

Considering the p-value of *Kruskal-Wallis* test, whose the null hypothesis assumes that the distribution of municipality's involvement degree in each activity of the smart specialization process of Q3.3 is the same across categories of Q3 group (involved and non-involved), the null hypothesis is rejected to all presented activities. This means that there are significant differences between the involved and non-involved groups of municipalities in what concerns to municipality's involvement degree in the various activities of the smart specialization process.

The five responses received to question 3.3.1 “If you selected ‘Other tasks’, please specify the most relevant” (“Se seleccionou ‘Outras tarefas’, por favor, especifique as mais relevantes”) are mere observations, noting the availability of the municipality to join / participate in the proposed activities (open attitude).

Regarding to question 3.4 “Degree of involvement of each of the following entities in the smart specialization process of municipality” (“Grau de envolvimento de cada uma das seguintes entidades no processo de especialização inteligente do município”), Table 23 presents the summary of the answers and the results of the *Independent Samples Kruskal-Wallis test* (involved versus not involved) by each group of activities. Once again, by each entity, the five Likert scale is reduced to two groups to create dummy variables, as described above.

According to respondent municipalities, overall CCDR (63.04%), reference companies (41.3%) and universities (35.87%) are the most involved entities in the smart specialization process of municipality. Once again and as expected, the degree of

involvement of the different presented entities is higher in the involved group of municipalities, compared to the non-involved group.

Considering the p-value of *Kruskal-Wallis* test, whose the null hypothesis assumes that the distribution of the degree of involvement of each entity of Q3.4 is the same across categories of Q3 group (involved and non-involved), the null hypothesis is rejected to CCDR and reference companies. This means that there are significant differences between the involved and non-involved groups of municipalities in what concerns to the degree of involvement of those entities in the smart specialization process of municipality.

Table 23. Degree of involvement of each of the following entities in the smart specialization process of municipality (Q3.4)

Entities	Total Mean (# 92)	Involved group (# 60)	Non- involved group (#32)	p-value (Kruskal Walis Test)	Decision
Universities	35.87	36.67	34.38	0.828	Retain the null hypothesis
CCDR	63.04	75.00	40.63	0.001	Reject the null hypothesis
Professional Associations	22.83	25.00	18.75	0.499	Retain the null hypothesis
Commercial and industrial Associations	33.70	40.00	21.88	0.081	Retain the null hypothesis
Reference institutes	27.17	31.67	18.75	0.187	Retain the null hypothesis
Reference companies	41.30	50.00	25.00	0.021	Reject the null hypothesis
Others	2.17	1.67	3.13	0.650	Retain the null hypothesis

Asymptotic significances are displayed. The significance level is 0.05.

As responses to question 3.4.1 “If you selected ‘Other’, please specify the most relevant” (“Se seleccionou ‘Outras’, por favor, especifique as mais relevantes:”) were highlighted the regional inter-municipal Communities, the competitiveness and technology Poles and Clusters.

Finally, the answers to the question 3.5 “Severity level of the following constraints in the implementation of smart specialization process of the municipality” (“Grau de gravidade de cada um dos seguintes constrangimentos na implementação do processo de especialização inteligente do município”) are considered. Table 24 presents the summary of the answers and the results of the *Independent Samples Kruskal-Wallis test* (involved versus not involved) by each group of constraints. Using the same procedure above, by each constraint, the Likert scale of five categories (“no problematic”, “a bit problematic”, “some problematic”, “problematic” and “too problematic”) is reduced to

a dummy variable, which assumes the value 1 if the severity level is “too problematic” or “problematic”, and 0 if it is “no problematic”, “a bit problematic” or “some problematic”.

Table 24. Severity level of the following constraints in the implementation of smart specialization process of the municipality (Q3.5)

Constraints	Total Mean (# 92)	Involved Group (# 60)	Non-involved group (#32)	p-value (<i>Kruskal-Wallis Test</i>)	Decision
Scarce Information from CCDR	17.39	15.00	21.88	0.410	Retain the null hypothesis
Scarce Information from central government	29.35	26.67	34.38	0.442	Retain the null hypothesis
Scarce EU Information	25.00	23.33	28.13	0.615	Retain the null hypothesis
Poor quality of information from CCDR	17.39	16.67	18.75	0.803	Retain the null hypothesis
Poor quality of information from central government	20.65	18.33	25.00	0.454	Retain the null hypothesis
Poor quality of EU Information	22.83	21.67	25.00	0.718	Retain the null hypothesis
Not clarifying the boundaries	23.91	23.33	25.00	0.859	Retain the null hypothesis
Absence of human resources	39.13	36.67	43.75	0.510	Retain the null hypothesis
Need of human resources training	37.78	35.00	43.33	0.445	Retain the null hypothesis
Other constraints	3.26	3.33	3.13	0.957	Retain the null hypothesis

Asymptotic significances are displayed. The significance level is 0.05.

As expected the severity level of the constraints is higher for the non-involved group, compared to the involved group. Overall, “Absence of human resources”, “Need of human resources training” and “Scarce Information from central government” are the constraints considered more severe.

However, considering the p-value of *Kruskal-Wallis* test, the null hypothesis is rejected to all presented constraints, i.e., there are not significant differences between the involved and non-involved groups of municipalities in what concerns to the severity level of the constraints in the implementation of smart specialization process of the municipality.

As responses to question 3.5.1 “If you selected ‘Other constraints’, please specify the most relevant” (“Se seleccionou ‘Outros constrangimentos’, por favor, especifique as mais relevantes.”) were noted constraints in recruitment process of human resources and short time to the assessment and analysis.

The next chapter sums up the conclusions of this dissertation, presenting the answers to the research questions.

5. Conclusion

This chapter presents an overview of the major findings of this study, answering the research questions presented in Introduction. It is also addressed the contributions of this research and outlined the opportunities for future research.

5.1. Main outcomes

The literature review presents the current scenario of (regional) smart specialization and smart specialization strategies, highlighting their importance to regions and the role of local government in this process. All relevant stakeholders (entrepreneurial actors) should work together in smart specialization strategy definition and implementation.

This dissertation focuses on one of those actors: the municipalities. Due to their competences and their role in the development and innovation of their region, in public policy process, their proximity of the citizens, their knowledge of the past and present of the region, their strengths, and their role in building of relationships with others stakeholders with ‘responsibility’ on this process, municipalities are a relevant stakeholder that justify the pertinence to this study.

The main purpose of this research was to analyze the Portuguese municipalities’ awareness of the importance of smart specialization to regions and their role and activities performed (if any) in this process. At this stage we are able to answer the formulated research questions.

- *In what extent local government is aware of the smart specialization?*

The large majority of municipalities (83.6%; 92 municipalities) are knowledgeable of policies of smart specialization strategy under Horizon 2020. In general, the non-knowledgeable municipalities about such policies have not yet identified specialization fields/areas/sectors that could benefit from smart specialization strategy (18 municipalities). However, a small number of municipalities (5 of 18 municipalities) assumed that identification is in process, but none of municipalities declared have already identified them. The majority of municipalities (60 of 92 municipalities) that are aware of the smart specialization strategy are involved in that process; nevertheless, 32 knowledgeable municipalities are not involved in the process. So, 50 in 110 municipalities are not involved yet in the process.

Additionally, there is no significant relationship between this knowledge and municipality's size or NUTS II, as well as in the case of non-knowledgeable municipalities between the existence of key domains/areas/sectors of specialization already identified and municipality's size or NUTS II, and in the case of knowledgeable municipalities between municipality's involvement in the definition process of smart specialization strategies and municipality's size or NUTS II.

- *What are the perceptions of municipalities about their role in Regional Smart Specialization Strategy process and the current constraints?*

The knowledgeable municipalities are aware of their role in Regional Smart Specialization Strategy process as: Facilitator/promoter of incentives in terms of public local policies to the discovery of specializations - supporting the Horizon 2020 applications; Interlocutor with the entrepreneurs and/or business associations and/or professionals of the regions; Supporting entrepreneurs in the management and dissemination of a network of mutual relations to boost the discovery process; Relevant information's agglutinant on emerging opportunities, products, and safety standards of the process; Promoter of complementary investments related to emerging specializations, primarily training people; Influencer of the choice of specializations by supra-regional entities; and Monitoring.

As expected, the percentages/frequencies for all these activities are frankly higher for the involved group of municipalities in smart specialization process compared to the non-involved group, with statistically significant differences. The activities "Interlocutor with the entrepreneurs and/or business associations and/or professionals of the regions", "Supporting entrepreneurs in the management and dissemination of a network of mutual relations to boost the discovery process" and "Facilitator / promoter of incentives in terms of public place policies to the discovery of specializations - supporting the Horizon 2020 applications" present higher municipalities' involvement, while the activity with lesser involvement is "Monitoring".

Different entities are involved in the smart specialization process of municipality, such as Universities, CCDR, Professional Associations, Commercial and industrial Associations, Reference institutes, Reference companies. Nevertheless, according to respondent municipalities, CCDR, reference companies and universities are the most

involved entities. As expected the degree of involvement of the different entities is higher in the involved group of municipalities, compared to the non-involved group. Moreover, there are significant differences between the involved and non-involved groups of municipalities in what concerns to the degree of involvement CCDR and reference companies in the smart specialization process of municipality.

In what concerns to constraints in the implementation of smart specialization process, scarce information from CCDR, scarce information from central government, scarce EU information, poor quality of information from CCDR, poor quality of information from central government, poor quality of EU Information, not clarifying the boundaries, absence of human resources, and need of human resources training are some examples.

Overall, “Absence of human resources”, “Need of human resources training” and “Scarce Information from central government” are the constraints considered more severe. As expected the severity level of the constraints is higher for the non-involved group, compared to the involved group, but there are not significant differences between the involved and non-involved groups of municipalities in what concerns to the severity level of the constraints in the implementation of smart specialization process of the municipality.

To the non-knowledgeable municipalities, key interlocutors, such as CCDR, professional associations, commercial/industrial associations, research institutes, and reference company are considered important in the context of regional policy.

■ *What are they doing within Regional Smart Specialization Strategy process?*

Within the definition process of smart specialization strategies, municipalities develop activities such as: participation in meetings; promoter of workshops; people training; gathering of information (studies); benchmarking; and working groups to implement the strategies.

The principal activities that the involved group of municipalities develops are: participation in meetings; gathering of information (studies) and working groups to implement the strategies. To non-involved group, the main activity is the gathering of information (studies). Overall, the participation in meetings and the gathering of information (studies) are the main activities that municipalities have developed, and people training the activity least developed.

Additionally, there are significant differences between the involved and non-involved groups in what concerns to participation in meetings, people training, information collection (studies) and working groups to implement the strategies; and there are not significant differences between the involved and non-involved groups regarding to workshop promoter and benchmarking.

5.2. Contribution, limitations and opportunities for future research

This research gives an overview of the Portuguese scenario about the awareness and the role of municipalities within the regional smart specialization process, through a quantitative approach. Its conclusions are important to all municipalities.

As limitations, only one third of the Portuguese municipalities answered the questionnaire and this is an exploratory study that needs to be complemented with a qualitative analysis in order to explain in greater detail the obtained results.

So as future research, it would be interesting to develop a deep study, using qualitative method such as interviews to Mayors, and single or multiple case studies, to understand why several municipalities are not involved in the smart specialization process or/and how the process has been developed in the involved municipalities. This study can also be extent to other entrepreneurial actors.

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Appendices

Appendix 1. Questionnaire

O papel dos Municípios Portugueses na Estratégia de Especialização Inteligente Regional

O papel dos Municípios Portugueses na Estratégia de Especialização Inteligente Regional

O Horizonte 2020 é a estratégia da União Europeia (EU) para o crescimento e o emprego, que visa criar condições para um crescimento inteligente, sustentável e inclusivo. A implementação de uma estratégia de especialização inteligente é fundamental na atribuição de fundos no âmbito do programa Horizonte 2020.

O conceito de especialização inteligente atende à seleção de áreas prioritárias, tendo por objetivo a afetação mais eficiente dos recursos a investimentos com maior impacto potencial na economia regional. O processo de seleção deverá estar intrinsecamente ligado às características dos territórios e dos seus atores.

* Required

Câmara Municipal: *

.....

Nome do respondente (1º e Último nome):

.....

Cargo do respondente (função/ nível hierárquico): *

.....

Departamento do respondente (caso exista):

.....

Contacto do respondente (email/ou telefone):

.....

1. O município tem conhecimento das políticas da estratégia de especialização inteligente regional no âmbito do Horizonte 2020? *

Mark only one oval.

- ☐ Não. (Por favor passar para a Questão 2)
- ☐ Sim. (Por favor passar para a Questão 3 e continuar o questionário)

2. Se respondeu NÃO na Questão 1

2.1. O município tem já identificados domínios/áreas/setores de especialização-chave que beneficiariam da estratégia de especialização inteligente?

Mark only one oval.

- ☐ Não.
- ☐ Não, mas o processo de identificação está em curso.
- ☐ Sim.

2.1.1. Se respondeu sim na Questão 2.1, por favor, especifique quais:

.....

.....

.....

.....

.....

2.2. No âmbito da implementação da política regional, indique qual seria a importância dos interlocutores chave do município?

Mark only one oval per row.

	Nada importante	Pouco importante	Algo importante	Importante	Muito importante
CCDR's	☐	☐	☐	☐	☐
Associações profissionais	☐	☐	☐	☐	☐
Associações comerciais/ industriais	☐	☐	☐	☐	☐
Institutos de Investigação	☐	☐	☐	☐	☐
Empresa de Referência	☐	☐	☐	☐	☐
Outros	☐	☐	☐	☐	☐

2.2.1. Se respondeu "Outros", por favor, especifique:

.....

3. Se respondeu SIM na Questão 1.

3.1. O município esteve/está envolvido no processo de definição de estratégias de especialização inteligente?

Mark only one oval.

- ☐ Não.
- ☐ Sim.

3.2. Que atividades têm sido desenvolvidas neste âmbito pelo município? (Por favor marque as opções que entender relevantes)

Check all that apply.

- ☐ Participação em reuniões.
- ☐ Promotor de workshops.
- ☐ Formação de pessoas.
- ☐ Recolha de informação (estudos).
- ☐ Benchmarking (Processo contínuo e sistemático de melhores práticas e comparação com outros municípios nacionais e estrangeiros)
- ☐ Grupos de trabalho para implementação das estratégias.
- ☐ Outras.

3.2.1. Se selecionou "Participação em reuniões", por favor, indique com que Entidades:

.....

.....

3.2.2. Se seleccionou "Outras", por favor, especifique as mais relevantes:

3.3. . Grau de envolvimento do município em diversas actividades do processo da especialização inteligente regional.

Mark only one oval per row.

	Nada envolvido	Pouco envolvido	Algo envolvido	Envolvido	Muito envolvido
Facilitador/promotor de incentivos em termos de políticas públicas locais à descoberta das especializações - apoio às candidaturas Horizonte 2020	☐	☐	☐	☐	☐
Interlocutor com os empresários e/ou associações empresariais e/ou profissionais da regiões	☐	☐	☐	☐	☐
Apoio aos empresários na gestão e difusão de uma rede de relações mútuas para impulsionar o processo de descoberta	☐	☐	☐	☐	☐
Aglutinador de informação pertinente sobre oportunidades emergentes, produtos, e normas de segurança do processo	☐	☐	☐	☐	☐
Promotor de investimentos complementares relacionados com as especializações emergentes, nomeadamente da formação das pessoas	☐	☐	☐	☐	☐
Influenciador da escolha das especializações pelas entidades suprarregionais.	☐	☐	☐	☐	☐
Monitorização do processo de avaliação	☐	☐	☐	☐	☐
Outras tarefas.	☐	☐	☐	☐	☐

3.3.1. Se seleccionou "Outras tarefas", por favor, especifique as mais relevantes:

3.4. Grau de envolvimento de cada uma das seguintes entidades no processo de especialização inteligente do município.

Mark only one oval per row.

	Nada envolvido	Pouco envolvido	Algo envolvido	Envolvido	Muito envolvido
Universidades	☐	☐	☐	☐	☐
CCDRs	☐	☐	☐	☐	☐
Associações profissionais	☐	☐	☐	☐	☐
Associações comerciais/industriais	☐	☐	☐	☐	☐
Institutos de investigação	☐	☐	☐	☐	☐
Empresas de referência	☐	☐	☐	☐	☐
Outras.	☐	☐	☐	☐	☐

3.4.1. Se selecionou "Outras", por favor, especifique as mais relevantes:

3.5. Grau de gravidade de cada um dos seguintes constrangimentos na implementação do processo de especialização inteligente do município.

Mark only one oval per row.

	Nada problemático	Pouco problemático	Algo problemático	Problemático	Muito problemático
Escassa informação sobre as competências no Processo da Especialização inteligente veiculadas pelas CCDR's	☐	☐	☐	☐	☐
Escassa informação sobre as competências no Processo da Especialização inteligente veiculadas pelo Governo central	☐	☐	☐	☐	☐
Escassa informação sobre as competências no Processo da Especialização inteligente veiculadas pela União europeia	☐	☐	☐	☐	☐
Fraca qualidade da informação disponível quanto à implementação do processo de Especialização inteligente veiculada pelas CCDR's	☐	☐	☐	☐	☐
Fraca qualidade da informação disponível quanto à implementação do processo de Especialização	☐	☐	☐	☐	☐

inteligente veiculada pelo Governo central					
Fraca qualidade da informação disponível quanto à implementação do processo de Especialização inteligente veiculada pela União europeia	☐	☐	☐	☐	☐
Não clarificação dos limites e fronteiras de atuação do Município no processo de Especialização Inteligente	☐	☐	☐	☐	☐
Falta de Recursos Humanos	☐	☐	☐	☐	☐
Necessidade de formação adicional e específica dos Recursos Humanos do Município	☐	☐	☐	☐	☐
Outros constrangimentos (por favor especifique os mais relevantes):	☐	☐	☐	☐	☐

3.5.1. Se selecionou "Outros constrangimentos", por favor, especifique os mais relevantes:

Bem-Haja pela valiosa colaboração.

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Appendix 2. Presentation Letter



De: Pedro Nuno Ferreira de Oliveira

Assunto: Estratégias de especialização inteligente dos municípios portugueses

Ex.mo(a). Sr(a).

Presidente da Câmara Municipal

No âmbito do Mestrado em Empreendedorismo e Inovação Tecnológica, em co-tutela pelas Faculdades de Engenharia e de Economia da Universidade do Porto, encontro-me a desenvolver a minha dissertação subordinada ao tema *O Papel dos Municípios Portugueses na Estratégia de Especialização Inteligente Regional*, orientada por Aurora Teixeira.

Em virtude da escassez de informação sobre este assunto ao nível municipal, a inquirição direta aos municípios releva-se como a única fonte de informação relevante para elaboração de estudos de natureza científica. Assim, elaborei um inquérito (em anexo) que permitirá a recolha de informação adequada. A informação será tratada em agregado, estando garantida a confidencialidade dos dados.

Solicito a Vossa preciosa colaboração no preenchimento do referido inquérito, pela Sua pessoa ou por quem entenda que esteja mais habilitado para o fazer.

Para responder ao inquérito poderão fazê-lo directamente no link https://docs.google.com/forms/d/1Lg15OuQ43dSs5SARVS3axEF_KlwqV-I3NkPHVNoYg84/edit ou enviar o inquérito por email (EIMP@fep.up.pt) ou fax (225505050, A/C: Aurora Teixeira). Posso ainda, caso prefiram, ligar e recolher a informação directamente via telefone.

No sentido de cumprir os prazos estipulados para entrega da dissertação ficaria extremamente agradecido se me pudessem devolver o inquérito respondido até **08 de Abril de 2015**.

Estou disponível para esclarecimentos ou dúvidas que eventualmente subsistam (telemóvel 917508760).

Na expectativa do Vosso melhor acolhimento, subscrevo-me endereçando os meus melhores cumprimentos.

Atentamente,

Pedro Oliveira

Contactos:

Pedro Oliveira, Telm. 917508760; email: EIMP@fep.up.pt; fax: 225505050 (A.C.: Aurora Teixeira)