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Published in:
Towards Sustainable Technologies and Innovation

Published: 25/04/2018

Document Version
Publisher's PDF, also known as Version of record

Please cite the original version:
Roman, M., Nyberg, T., & Fellnhofer, K. (2018). SMART SPECIALISATION IN FINNISH REGIONS: HOW TO FACILITATE CONTINUOUS ENTREPRENEURIAL DISCOVERY PROCESS? In B. Nunes, A. Emrouznejad, D. Bennett, & L. Pretorius (Eds.), Towards Sustainable Technologies and Innovation: 27th Annual Conference of the International Association for Management of Technology (pp. 1-16). Operations and Information Management Group, Aston Business School, Aston University.

SMART SPECIALISATION IN FINNISH REGIONS: HOW TO FACILITATE CONTINUOUS ENTREPRENEURIAL DISCOVERY PROCESS?

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ABSTRACT

Smart specialisation was launched as the innovation policy of European Union (EU) to foster regional innovation and economic transformation. The existence of research and innovation strategies for smart specialisation (RIS3) was set as a prerequisite for European regions to be eligible for receiving funding for European structural investment funds (ESIF). Today, the focus of European Commission (EC) is to strengthen the sustainability aspect of the smart specialisation approach. It is not enough that regions develop smart specialisation strategy as a one-time effort. The regions should ensure the establishment of continuous collaboration with the entrepreneurial actors to realize smart specialisation strategy, to assess the results of the implementation efforts and to refine strategy when needed. There has been few studies in prior research related to continuous entrepreneurial discovery process and the underlying mechanisms to sustain stakeholders' engagement. Our paper explores how regional councils in Finland facilitate continuous stakeholder interaction in the context of smart specialisation. The objective is to identify key mechanisms for continuous entrepreneurial discovery process. As key findings of our semi-structured interviews with the regional councils in Finland, we identify the development of specific frameworks and tools, the establishment of horizontal and vertical innovation networks and the integration of smart specialisation in regional development cycle as key mechanisms to facilitate continuous stakeholder interaction. Our work contributes to current debate on conceptual underpinnings of continuous entrepreneurial discovery process. We also provide practical examples for other EU regions how to sustain continuous stakeholder interaction in the context of smart specialisation.

Key words: Collaborative innovation; entrepreneurial discovery process; private-public sector; regional innovation system; research and innovation strategies for smart specialisation; smart specialisation

INTRODUCTION

Smart specialisation concept was introduced by the high-level expert group "Knowledge for Growth" within the European Commission (Foray et al., 2009), and in a short timeframe developed into the major industrial and innovation policy within European Union (EU) (Foray, 2014). The main idea is that EU regions identify the key activities, areas or technological domains in which they can have competitive advantage, also globally, and focus their regional policies to promote innovation in these

fields (OECD, 2014). The key principle that differentiates smart specialisation from other innovation and industry policies is entrepreneurial discovery process (EDP).

EDP as a concept has roots in Austrian economics, which view markets as entrepreneurially driven processes. Entrepreneurial discovery is a systematic process in which market participants acquire more accurate and complete mutual knowledge of potential demand and supply attitudes through joint interaction (Kirzner, 1997). The learning what one is good at producing is a determinant of structural change (Hausmann and Rodrik, 2003). EDP in the context of smart specialisation can be defined as a bottom-up approach where stakeholders work together to discover and produce information about new activities and the government assesses the outcomes and empowers those most capable of realising the innovation potential (Foray, 2014; Hausmann and Rodrik, 2003; McCann & Ortega-Argilés, 2014). The concept of entrepreneur here is understood in a broad sense (businesses, universities, research institutes and innovation users) to include anyone who is in the best position to be creative in integration of different approaches for new market opportunities (Coffano and Foray, 2014). The role of private sector is to discover and produce information about new activities, and the role of the public sector, regional authority, is to provide facilitate stakeholder interaction, assess potential and empower those actors of most capable of realizing the potentials (OECD, 2014).

Capturing full benefits of EDP requires it to become a continuous process (Marianelli and Perinez Forte, 2017; McCann and Ortega-Argiles, 2016; Roman and Nyberg, 2017). Despite the strong emphasis on continuous EDP in prior research, there have been few studies to clarify the conceptual underpinnings of continuous EDP (Marianelli and Perinez Forte, 2017; Vivanco et al., 2016). The objective of our study is to increase current understanding on what constitutes continuous EDP and how to facilitate such a process. We adopt a multiple case study approach to examine continuous collaboration through semi-structured interviews with 17 out of 18 Finnish mainland regions. We interviewed 23 facilitators of smart specialisation, mainly Finnish regional councils in August-November 2017. As key findings, we identified the underlying mechanisms through which to sustain continuous EDP as being the development of specific frameworks and tools, the establishment of horizontal and vertical innovation networks and the integration of smart specialisation strategy update as part the regional development cycle. We contribute on current debate on conceptual underpinnings of continuous EDP and provide practical examples how to facilitate such a process.

The structure of our paper is the following. We first provide a brief review of prior literature related to entrepreneurial discovery process. Second, we define our research method and data used in the empirical research. Third, we present our case study and the key findings of our research. Finally, we conclude our paper with the discussion of the contribution of our research, as well as its limitations and our suggestions for future research.

ENTREPRENEURIAL DISCOVERY PROCESS

Foray (2015, p. 31) defines the framework for EDP as “a decentralised dynamic process that should ensure the continuous transformation of productive structures through research and innovation”. Prior research has presented many challenges that regions face in the implementation of EDP (Kyriakou et al., 2017, Radosevic et al., 2017). There is risk that policymakers turn smart specialisation policy into another top-down planning procedure because they do not understand or neglect the

principle of EDP (Foray, 2017). Other challenges relate to EDP are collective action problem – how to get different actors with different individual goals to contribute and commit to a shared vision and goals as well as ensuring EDP arena open for new entrants to avoid the involvement of only the "usual suspects" (Kyriakou, 2017). Furthermore, it may be very challenging to engage the true collaboration between the public and private sector. In fact, the case where companies really engage in conceiving and implementing strategies together with institutions is very rare (Grillo, 2017).

The dynamic EDP has opened a debate in terms of the gap among thinkers and doers among different types of stakeholders in the entrepreneurial settings and how to facilitate continuous collaboration (Cavicchi et al., 2014; Santini et al., 2016). Gheorghiu et al. (2016) recommend using a "foresight-based toolkit for entrepreneurial discovery" to support the continuous collaboration processes of smart specialisation to merge the different input from actors and stakeholders during the EDP. However, foresight methods are known to assurance that the smart specialisation selection is (self-)reflective and collaborative. Furthermore, broad consultation could also facilitate consensus of favoured research and innovation niches taking different stakeholders' perspective into account. Legitimacy should be built on a rich evidence base rendering the regional ecosystem, and a process which allows an argument-based agreement on prioritisation depending on joint stakeholders' expectations of the regional ecosystem (Gheorghiu et al. 2016).

Traditional approaches have limited effectiveness for EDP (Munoz and Huser, 2008; Gilmore and Carson, 1996, 2007; Santini et al., 2016). A specific type of interaction is necessary for a joint learning approach as well as knowledge exchange and combination between quadruple helix partners. Methods for this scope are rather rare (Cook and Brown, 1999; Higgins and Elliott, 2011) (Santini et al. 2016). The opportunity recognition's systematic view claims that eager entrepreneurs are able to advance their chances of finding useful venture ideas when they systematically search in places that are known by them (Fiet, 2002; Fiet et al., 2004). Other quadruple helix stakeholders such as researchers, policy-makers and the public at large show potential to support and facilitate this search via continuous collaboration and knowledge exchange.

When scanning and searching is active or passive, proactive connection and association of knowledge in possible (Alvarez & Barney 2002). This is expected to be vital in the sphere of smart specialisation when (re)designing research and innovation strategies on behalf of different stakeholders. By using associations, a stakeholder can consider and link different aspects and views. Connecting unconnected spheres is supported in the process of specialisation for the regional and national context. Association and connection display the ability of an individual (e.g. entrepreneur, policy maker, researcher) to link unconnected information which is expected to be valuable. It brings along answers to open questions for a broader framework linked to businesses, research and policy.

Taking a diverse set of stakeholders into account, association ought to be connected to the creativity of individuals or the capability to establish interrelated ideas, processes, solutions, products or services (Shalley 1995). Investigations regarding creativity refer to differences in creative thinking between individuals. The focus lies on the cognitive and motivational process that could enlighten the differences. Overall, association allows one to create a big picture with links and relationships (Lehrer, 2008; Tang et al., 2012). This can be achieved through careful alteration of information (Neisser 1967). When detecting something unexpected or uncommon, association lets individuals alter the already existing schemata to adjust not matching facts (Gaglio & Katz 2001). This is in particular vital for the entrepreneurial domain, but also for smart specialisation. This is crucial to inspire and motive other

stakeholders to recognise the unexplored potential. The new-found perspective needs to be translated, connected and associated (Tang et al. 2012).

Prior research has stressed the importance of developing mechanisms for continuous collaboration beyond the traditional approaches. Further investigation and policy support has recently been called for, especially to identify the mechanism through to sustain stakeholders' engagement in the activities such as monitoring, governance or the management of calls (Marianelli and Perinez Forte, 2017). In addition to the establishment of mechanisms, it is critical to develop strong commitment to smart specialisation at various institutional levels and sound relationship between private and public sectors to overcome the challenges of collaboration (Grillo, 2017, Rodriguez-Pose and Wilkie, 2017). Our paper explores these both aspects – how to develop the mechanisms for continuous collaboration and how to build commitment necessary for the stakeholders to engage in such continuous collaboration in the context of smart specialisation.

RESEARCH METHODS AND DATA

We adopted a multiple case research design following the principles of grounded theory approach (Corbin & Strauss, 1990; Gioia et al., 2013) to explore the mechanisms through which the regions conduct continuous stakeholder engagement in the context of smart specialisation. This type of approach is typical for research that is explorative in nature, and involves a dynamic phenomenon for which there exists little prior knowledge. Having data from several cases allows us to develop a more accurate, generalizable theory than single cases, as we can extract and compare findings from several regions (Eisenhardt, 1989). Furthermore, we use triangulation in order to enhance the validity of our findings through using also secondary research data such as RIS3 presentations and reports of regional councils (Yin, 2009).

We gathered primary research data through semi-structured interviews with regional authorities in Finland responsible of smart specialisation process. The interview questions related to the stakeholder engagement and interaction in smart specialisation development and implementation in the regions. We identified which stakeholders were invited, how they were motivated to participate and how they were involved in continuous stakeholder interaction.

In total, we interviewed 23 persons working mainly in regional councils through 18 interviews. Our data covers 17 out of 18 Finnish mainland regions that we invited for the interview in August 2017. The interviews lasted approximately one hour each and were conducted by phone, except one interview that was a face-to-face meeting with Helsinki-Uusimaa region.

Table 1: List of regional interviews

Region	Organisation	Title of interviewee(s)	Interview date
South Carelia	Regional Council of South Carelia	• Development Director • Manager, Regional Development	2017-09-18
South Ostrobothnia	Regional Council of South Ostrobothnia	• Director of International Affairs and Culture • Regional Development Planning Officer • Project Coordinator	2017-11-01

South Ostrobothnia	University of Tampere	• Research Manager	2017-10-03
South Savo	South Savo Regional Council	• Manager, Regional Business Development and Innovation	2017-08-29
Helsinki-Uusimaa	Helsinki-Uusimaa Regional Council	• Innovation Adviser	2017-08-24
Häme	Regional Council of Häme	• Senior Adviser	2017-09-14
Kainuu	Regional Council of Kainuu	• Regional Development Specialist	2017-09-11
Central Ostrobothnia	Regional Council of Central Ostrobothnia	• Manager of International Affairs	2017-09-08
Central Finland	Regional Council of Central Finland	• Development Manager	2017-08-29
Lapland	Regional Council of Lapland	• Project Manager	2017-08-31
Ostrobothnia	Regional Council of Ostrobothnia	• International Coordinator	2017-09-04
Tampere region	Council of Tampere Region	• Senior Officer	2017-09-23
Pohjois-Karjala	Regional Council of Pohjois-Karjala	• Regional Development Manager • Regional Development Advisor	2017-08-25
Pohjois-Savo	Regional Council of Pohjois-Savo	• Manager, Regional Development	2017-09-22
Oulu Region	Council of Oulu Region	• Development Manager	2017-10-04
Päijät-Häme	Regional Council of Päijät-Häme	• Senior Advisor, International Affairs	2017-09-12
Satakunta	Regional Council of Satakunta	• Regional Advisor	2017-11-10
Southwest Finland	Regional Council of Southwest Finland	• Senior Planning Officer • Senior Planning Officer	2017-09-06

We recorded all interviews, transcribed and analysed them in Atlas.ti. We first identified all activities related to the continuous stakeholder interaction from our interview transcriptions and labelled them as 1st order terms. We then merged similar activities together and labelled their key functions as 2nd order themes. Finally, we compared the different 2nd order themes with each other to extract the key mechanism that facilitate continuous EDP.

At the end, we provide real examples from Finnish regions regarding how to implement the different mechanisms in practice. We also describe the main motivations for different stakeholder groups to participate in continuous collaboration. Finally, we compared our findings to existing literature on continuous EDP.

CASE STUDY ON CONTINOUS ENTREPRENEURIAL DISCOVERY PROCESS

Characteristics of Finnish research and innovation system

The governance of Finnish research and innovation system is centralised in terms of national guidelines, strategies and funding, but a mix of national and local administration gives regions a relatively high degree of autonomy in the design and implementation of regional policies (Halme et al., 2017). The formulation of national Finnish science, technology and innovation policies has been assigned to the Research and Innovation Council, which is chaired by the Prime Minister (OECD, 2017). The thematic priorities in Finnish Governmment Programme include cleantech, digitalisation, bioeconomy and health sector (Halme et al., 2017). The focus of smart specialisation in Finland is on the knowledge base, lead markets initiatives and ecosystems development (Halme et al., 2017).

The private sector dominates the gross domestic expenditure on research and development (GERD). It accounted for 55% of total GERD in 2015, while the public sector accounted for 29% of GERD. The foreign sources accounted for 15% and non-profit organisations for 1% of GERD in 2015. The total value of GERD in Finland was about 6 billion euro in Finland. There is a declining trend in the volume of GERD, although it remained above 2.9% of GDP (Halme et al., 2017). The Finnish research and innovation system has ranked highly in international comparisons. Finland has been characterised as Innovation Leader in EU Innovation Scoreboard, having position score 131% over EU average in 2016 (European Commission, 2017). In the regional level, Helsinki-Uusimaa region and Southern Finland as a whole and Western Finland are characterised as Innovation Leader, while the Eastern and Northern part of Finland Strong Innovators (European Commission, 2017).

The Finnish research and innovation environment comprises several stakeholders. There are national, regional and local governmental innovation stakeholders. International and national big corporations, medium and small size entreprises, and different startups represent the industry. There are several national and local research institutes and the public university system in Finland is sizeable. Several public and private actors offer consulting services for those navigating in the innovation environment. The regional innovation platforms with active stakeholder collaboration have also a long history in Finland. The focus in recent years had been to complement the traditional science-technology-innovation (STI) mode of innovation with doing-using-interacting (DUI) mode of innovation (Kautonen et al., 2016, Uotila et al., 2012).

Regional Councils facilitate smart specialisation process in Finland. Regional Councils are statutory joint municipal authorities maintained by the given region's group of municipalities. The decision-making and executive bodies of Regional Council consist of elected politicians nominated by the member municipalities for a mandate of four years. Another important body is the Regional Cooperation Working Group, nominated by the board of the Regional Council, which is a discussion forum that brings together various stakeholders on an equal basis. (Nissinen, 2017). It approves the annual Implementation Plan of the Regional Strategic Programme, which is a legal demand for regions in Finland.

According to our interviews with 17 regional councils and with 23 RIS3 facilitators, smart specialisation is an integrated part of the Regional Strategic Programme in Finland. Regions engage a large group of stakeholders in the regional programme development work that can be characterized an open and transparent process. Incorporating RIS3 in this work allows it to take advantage of the existing regional

stakeholder networks and the coordination and communication mechanisms. Besides Regional Strategic Programme work, the Finnish regions have conducted specific RIS3 interviews and workshops as parallel or as separate process from Regional Strategic Programme work. According to our interviews, the main benefits associated with smart specialisation approach in Finland have been the following: 1) the development of shared vision and plan for the regional innovation efforts, 2) strengthened international and regional collaboration, 3) the development of new research infrastructures, new innovative ideas and new companies and 4) the support for the renewal of existing industries.

Key findings

In order to identify the key underlying mechanisms for continuous EDP in the Finnish regions, we systematically extracted all activities from our interviews related to continuous stakeholder interaction. Figure 1 illustrates the key findings of our research. Regarding similar approaches to facilitate stakeholder interaction taken in the regions such as cluster work, S3 thematic platforms, situational picture of innovation and future forums, we only raised these approaches once as 1st order terms in Figure 1.

At the end, we identified three key mechanisms to facilitate continuous entrepreneurial discovery process in the context of smart specialisations. First, there were a number of specific frameworks and tools developed in the regions to facilitate the creation of shared vision and understanding related to regional opportunities and development needs and to strengthen the regional innovation ecosystem. Second, the regions had established horizontal and vertical innovation networks to monitor and develop activities related to smart specialisation priority areas and to facilitate stakeholder interactions. These networks were mainly regional. However, the regions also participated actively in the existing national and international networks. Third, all Finnish regions had embedded smart specialisation strategy discussions as part of Regional Strategic Program. This ensured the regular smart specialisation strategy review and possible update every four years.

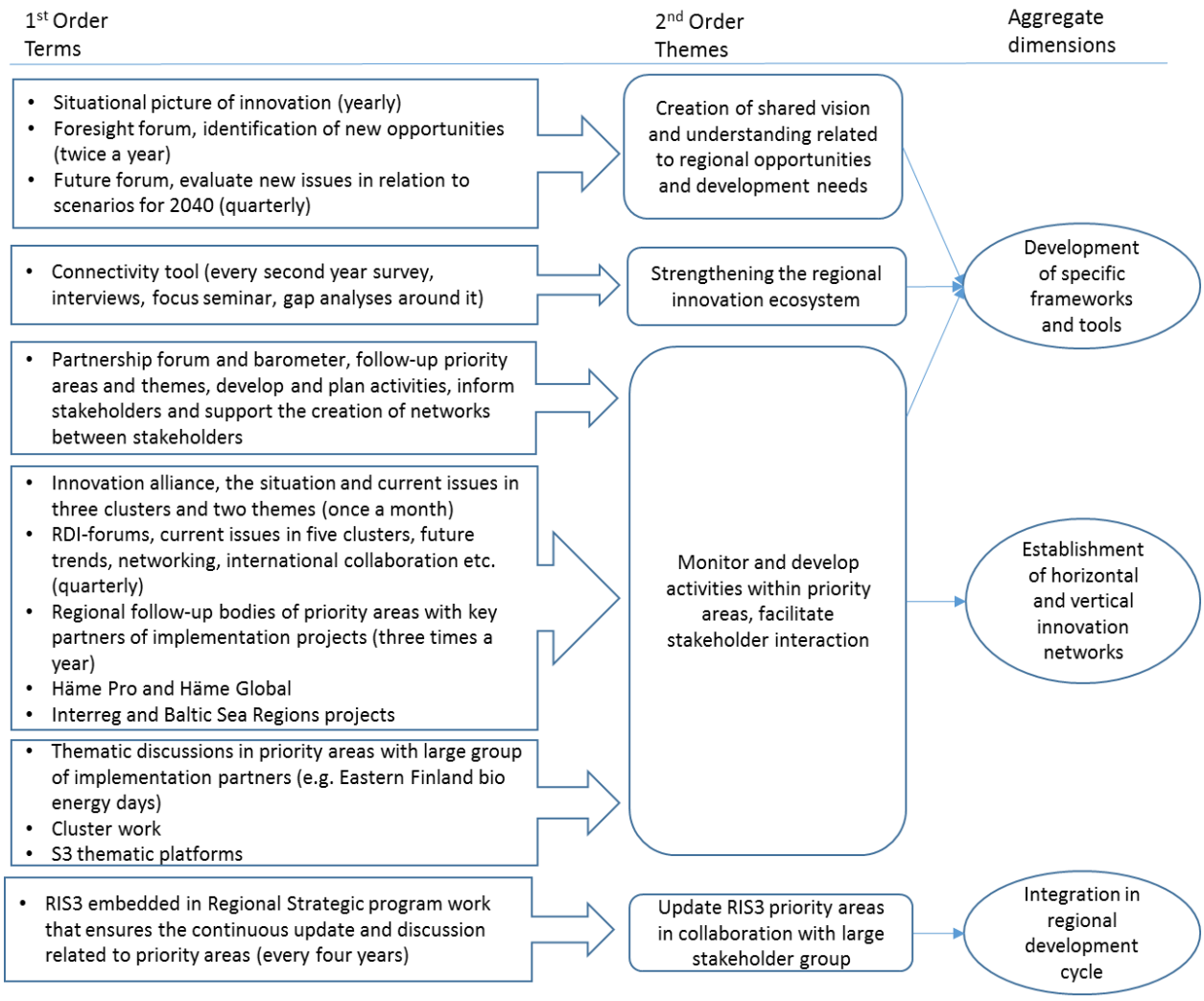

Figure 1: Key mechanisms for continuous EDP

We identified various tools and frameworks used in Finnish regions to facilitate continuous EDP of which each we provide a short description. First, the yearly "Situational picture of innovation" is a process adopted in three Finnish regions to foster the development of shared understanding regarding the competitiveness of regional innovation system and its development needs. It supports regional decision-making and offers up-to-date knowledge of regional innovation activities. In our example region, the region of Tampere, the "Situational picture of innovation" attracts a large group of interested stakeholder such as businesses, universities, research institutes, municipalities and different public and private sector organisations. The development of the "Situational picture of innovation" involves several steps - the coordination of information collection from various actors, the actual information collection and visualization as well as the development of shared interpretation. The actors involved in the development of the "Situational picture of innovation" are specialists and advisors from regional authorities, universities, public sector organisations, innovation platforms as well as businesses and financiers (Regional Council of Tampere, 2017). The results of the "Situational picture of innovation" are discussed with different stakeholder groups in both large events and small focus group meetings organized by the Regional Council.

Second, several Finnish regions have engaged with foresight and scenario work, with different set of tools and frameworks. These tools support the creation of shared vision for the region and the identification of future opportunities and development needs. We illustrate as an example a tool developed in Central Finland to conduct continuous collaborative foresight process. The maintenance and the development of the tool is a shared responsibility between 12 organisations such as the regional council, university, the city of Jyväskylä and several development organisations. There is yearly clock that illustrates what occurs in the future work and when (Regional Council of Central Finland 2017). Future forums, organized twice a year, offer a place to discuss and interpret together important phenomena, barometers or research results and identify future opportunities and development needs of the region. Newsletter is published quarterly to highlight global phenomena and weak signals raised by specialists of different areas as well as regional decision-makers with implications to the future development of the region. The vison and strategy work for Central Finland for the year 2040 developed earlier with different development scenarios give the bases for continuous collaborative foresight efforts in Central Finland.

Third, the "Connectivity tool" developed by the Finnish region of Ostrobothnia for strengthening the regional innovation ecosystem provides an example of continuous entrepreneurial discovery process. In brief, the phases of the process include a survey to the regional triple helix stakeholders (businesses, universities/research institutes and public sector organisations), interviews, gap analyses and focus seminar. The focus is to identify the expectations and experiences of different stakeholders groups in relation to the interaction and collaboration towards other stakeholder groups. The gap is the difference between expectations and experiences. For example, the relationships between businesses and public sector might differ in terms of employment issues, environmental regulation, spatial planning, technological development or business development (Virkkala et al., 2017). The "Connectivity tools" provides information about the bottlenecks between different collaboration aspects. The focus seminar is organised as a joint event at the end for different stakeholder groups to plan together actions how to improve the current bases of collaboration regarding the bottleneck areas. The smart specialisation projects are implemented to reduce the bottlenecks in the regional innovation ecosystem. The process is repeated every second year, which also facilitates monitoring of the results achieved and to develop further measures to improve the regional ecosystem. A more detailed description of the connectivity tool is available in a recent work by Virkkala et al. (2017).

In sum, all the developed tools and frameworks have many commonalities with each other. They involve a large number of different regional stakeholder groups through a systematic approach that follows a regular development cycle. Furthermore, all tools and frameworks deliver clear value for engaged stakeholders, which facilitates continuous stakeholder interaction and collaboration. The regular development cycle moreover enables close monitoring of the achieved results against previous years, and the planning of new activities.

The majority of Finnish regions have created both horizontal and vertical innovation networks. These networks have several purposes. They are to follow-up and monitor the performance of regional development activities related to the priority areas defined in smart specialisation strategy. They also foster the collaboration between the participants and serve as a tool to identify new development opportunities, plan for projects to realise them and to identify relevant project partners for implementation. As an example of a horizontal network, the Regional Council of Häme has developed Häme Pro and Häme Global networks. The participants include the central stakeholder groups

involved in the regional development activities such as the municipalities of Hämeenlinna, Forssa and Riihimäki, their business development organisations, the Chamber of Commerce, the Federation for Finnish Entrepreneurs, Häme University of Applied Sciences, Natural Resources Institute Finland and Lammi Biological Station from the University of Helsinki. The Regional Council invites these stakeholders to various development workshops and thematic work related to the preparation of Regional Strategic Program and the various national development initiatives and actions to discuss the situation of the region. The Häme Global network is an extended network from Häme Pro with additional stakeholders having specific interest and focus on the international angle of the collaboration. This network collects statistics and prepare analyses related to the international opportunities and development activities. They also regularly visit Finnish companies that either already have international activities or are planning to enter into the international markets to understand the views of these companies regarding the internationalisation aspects. The horizontal innovation networks in Häme region facilitate the knowledge exchange and transfer between the stakeholders as well as facilitate the development of new collaborations and projects.

As an example of vertical innovation networks, the region of Lapland has developed collaborative cluster networks around its five smart specialisation priority areas – Artic industry and circular economy, Artic smart rural communities, Artic design, Artic safety and Artic development environments. Lapland was selected as the cluster model region of the EU from among 44 candidates in 2014 (The Regional Council of Lapland, 2017a). The clusters gather local businesses that have the desire to grow and develop into a network. The businesses get support from development companies, regional development organisations and other business consultancies, possibly also from public and private funders as well as third sector actors. The cooperation with educational and research organisations allows the cluster businesses to develop research and innovation activities in the long-term. Furthermore, all cluster organisations in the joint meetings exchange and transfer the latest knowledge and developments related to the cluster area. There are currently 250 companies participating in the Artic industry and circular economy cluster in the region of Lapland. The goal of the cluster activity is to boost innovation activity and support companies to find new markets and grow. This also benefits the region in form of new jobs created, enhanced employment and prosperity (The Regional Council of Lapland, 2017a).

In addition to specific tools and frameworks and the establishment of horizontal and vertical innovation networks, we identified the third essential mechanism facilitating continuous entrepreneurial discovery process in the relation of smart specialisation. This is the integration of smart specialisation in the regular development cycle in the regions. In Finland, there is a legal demand that all regions need to develop a Regional Strategic Programme every four year. The regions need also to specify an action plan how to reach the strategy targets. There are several advantages of integrating smart specialisation to the existing development cycle. This ensures a continuous evaluation and update of the regional RIS3 priorities. This makes RIS3 as an active strategy that is part of regional development, not a standalone document left on its own. In other words, this approach guarantees that the smart specialisation will be implemented and not remain as a “floating” recommendation (The Regional Council of Lapland, 2017b). The Finnish regions in general has seen smart specialisation as a practical concept that supports them to strengthen the international angle of their activities and foster regional, national and international collaboration as a means to boost innovativeness. It supports the regions to get out from the box to seek new possibilities from the cross-sectorial collaboration, to develop common approaches towards regional development and to be

active in seeking international collaboration (The Regional Council of Lapland, 2017b). According to the interviews with 17 regions, the major benefits of smart specialisation has been to develop a common vision and plan for regional development, strengthen regional and international collaboration, support the development of research infrastructures, new innovative ideas, new companies as well as the renewal of industries.

Finally, according to the interviews the means to achieve strong commitment and collaboration between the different stakeholder groups is to ensure that all parties benefit of working close together. The main motivation for companies to participate in the regional development arise from strengthening the regional innovation ecosystem and thus improve the availability of the skilled employees. They also get access to up-to-date knowledge of regional innovation performance and may start collaborations with development organisations leading to joint EU-funded regional development projects. The main motivation for research and development organisations to participate in regional development arise from the possibility to influence regional innovation strategy and to define own role within it, to prepare oneself to apply for regional development funds and to identify joint interests and to develop bases for new collaborations. In addition, Regional Council that facilitate smart specialisation process need to make it easy and appealing to participate in regional development work. They can do this by developing tools and frameworks that facilitate stakeholder interaction and that tightly connect with the regional development process that follow a logical order of events. This ensures that it is easy to discuss the issues between different stakeholder groups when the tools and frameworks are well-known and used systematically. The Regional Council should furthermore try to use existing forums/networks as much as possible to make it convenient for participants to discuss and evaluate RIS3 as part of their ordinary meetings. The integration of smart specialisation in Regional Strategic Programme work is one example of implementing this. Another is the utilization of existing horizontal and vertical innovation networks when possible and integrating RIS3 in their agenda rather than needing to develop a new network from scratch.

CONCLUSION

Prior research has urged for identifying the mechanisms through which the regions can sustain continuous EDP (Marianelli and Perinez Forte, 2017; Vivanco et al., 2016), as the traditional approach for EDP is with limited effectiveness (Munoz and Huser, 2008; Gilmore and Carson, 1996, 2007; Santini et al., 2016). This study contributes to an ongoing debate dedicated toward conceptual underpinnings of a continuous EDP in the context of smart specialisation. As the key results, we identify three mechanisms that facilitate continuous EDP. These are the development of specific tools and frameworks for continuous stakeholder interaction, the establishment of horizontal and vertical innovation networks and the integration of RIS3 in regular regional development cycle.

The identified mechanisms for continuous EDP serve as the foundation for continuous stakeholder interaction. The development of specific tools and frameworks as well as the establishment of horizontal and vertical innovation networks all involve areas where there are mutual interests between different stakeholder groups to collaborate. This provides the motivation needed for parties to work together. Furthermore, these tools facilitate collaboration towards specified goals and establish shared procedures for communication, thus making collaboration more direct and the communication easier between different stakeholder groups. Finally, they all offer a systematic

approach to conduct continuous stakeholder interaction, to monitor and inform about the achieved results and to develop future actions for improving results. The region should employ various tools and frameworks as well as horizontal and vertical innovation networks to implement efficiently smart specialisation. For instance, there should be both stakeholder interaction within and across quadruple helix partners, within and across clusters and both regional, national and international level collaboration. The integration of RIS3 as part of regular regional development cycle we see as an important mechanism to sustain the continuous evaluation and the improvement of regional RIS3 as a whole.

We also provide best practice examples from Finnish regions that demonstrate how to implement the mechanisms for continuous collaboration in the context of RIS3. Our work provides a first fundament for further illuminations. Nevertheless, the key findings should be viewed with cautions since our qualitative-driven methodological approach focuses on Finland, as institutional context influences the viability of EDP. Consequently, we urge further studies to validate our findings in other contexts. These investigations would allow regional comparisons across Europe. Furthermore, we urge future studies to contrast the perspective of the regional councils with the enterprise managers and other stakeholders to get more in-depth information about the motivational factors to participate in the continuous EDP process. It would be also an interesting topic for future research to assess the outcomes of continuous EDP process through interviews with various quadruple helix stakeholders.

ACKNOWLEDGEMENTS

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 710659, ONLINE-S3. We are also indebted to the Finnish RIS3 facilitators that participated in the interviews. This article however reflects only the author's view. Neither the Research Executive Agency nor the European Commission is responsible for any use that may be made of the information it contains.

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