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Openness and Continuous Collaboration as the Foundation for Entrepreneurial Discovery Process in Finnish Regions

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Abstract. *Entrepreneurial discovery process (EDP) is a bottom-up process engaging regional actors from academic, business, government and civil society together to identify new market opportunities and overcome the potential barriers to innovation. While EDP forms the key principle behind the smart specialization policy of European Commission, its operationalization has remained a challenge. We adopted a grounded theory approach to explore the dynamics of EDP through a case study in Finnish regions. Our aim is to identify the key underlying factors of EDP. Based on the semi-structured interviews with 10 Finnish regions during September 2016, we identified openness, engaging, focused networking and continuous collaboration as the key factors underlying EDP. Our findings contribute to the theoretical debate on what constitutes EDP in the context of smart specialization. We also provide examples for policymakers how to implement these factors based on our case study.*

Keywords: *collaborative innovation, entrepreneurial discovery process, innovation policy, regional innovation system, smart specialization.*

Introduction

European Commission (EC) launched the smart specialization policy in 2013 and set the existence of research and innovation strategies for smart specialization (RIS3) as a precondition for the regions of European Union (EU) to be eligible to receive financial support from European Structural and Investment funds. The EU regions need to identify the key activities, areas or technological domains, in which they can have a competitive advantage, also globally, and to focus their innovation efforts in these areas (OECD, 2014). The smart specialization policy aims to support local entrepreneurship and innovation based on strategies, which are both realistic and appropriate in the regional context (McCann & Ortega-Argilés, 2014).

The key principle that differentiates smart specialization from other innovation and industry policies is the entrepreneurial discovery process (EDP) (OECD, 2014). This principle emphasizes that the government needs to engage with regionals

stakeholders, as it alone has imperfect and incomplete information about regional assets and competences (Rodrik, 2004). The regional stakeholders need together to discover new activities and areas, while the government assesses the outcomes of their work and empowers the actors most capable of realizing this potential (Hausmann & Rodrik, 2003; McCann & Ortega-Argilés, 2014; OECD, 2014).

Smart specialization and EDP set high demands on policymakers. They need to engage in an interactive dialogue with regional stakeholders. Furthermore, they need to change the logic from absorption of funds and the accounting of expenditures, towards facilitating strategy process and working towards the goals, objectives and performance set there (McCann & Ortega-Argilés, 2014). It is critical of policymakers to develop new incentives for entrepreneurs and other regional stakeholders to discover together new domains and new mechanisms to detect novel ideas, support experimentation, build inter-regional linkages and new educational programs (OECD, 2014). This means allowing for experimentation, which is typical of entrepreneurs, not of the public sector. The main question for policy makers is: who has or where is the entrepreneurial knowledge and how to integrate the fragmented knowledge base so as to generate exploration and discovery projects (Foray, 2014).

Despite the centrality of EDP to smart specialization context, the operationalization of EDP has remained a major challenge (Fellnhofer, 2017; Gheorghiu, Andreescu & Curaj, 2016; Kyriakou, Palazuelos Martinez, Periañez-Forte & Rainoldi, 2017; OECD, 2014; Roman & Nyberg, 2017). The risk is that policymakers turn smart specialization policy into another top-down planning process, as they fail to understand or neglect the principle of EDP (Foray, 2017). This is why the centrality of EDP needs to be stressed again and better explained (Foray, 2017). There is still lack of clarity and consensus what constitutes EDP (Todeva & Ketikidis, 2017; Vivanco, Elorduy & Eguía, 2016). Our research explores the underlying factors of EDP and their implementation in practice through a grounded theory approach. Our objective is to develop a holistic process model of EDP. Based on 13 semi-structured interviews with the facilitators of smart specialization strategy process in 10 Finnish regions, we found openness, engaging, focused networking and continuous collaboration as key factors underlying EDP. We further present a grounded theory model that provides both implication to theory and practice in the relation to smart specialization and entrepreneurial discovery process.

This paper is organized as follows. First, we present a brief theory background behind the concepts of smart specialization and entrepreneurial discovery process. Second, we present our research approach, data collection, and analyses. Third, we present our grounded theory model behind EDP as key findings and provide examples from Finnish regions how to employ the model in practice. Finally, we conclude our paper with the discussion of the links between our model and prior work on EDP and suggest areas for future research.

The entrepreneurial discovery process

The key theoretical concepts underlying entrepreneurial discovery process have roots in Austrian economics, which view markets as entrepreneurially driven processes. Kirzner (1997) presented entrepreneurial discovery as a systematic process in which market participants acquire more accurate and complete mutual knowledge of potential demand and supply attitudes. Hausmann & Rodrik (2003) emphasized self-discovery and presented economic development as a learning process. They claim that learning what one is good at producing is an important determinant of structural change. The engagement of entrepreneurs in this process is not without challenges, as the social returns are likely to be much larger than private efforts, as successful “discoveries” of what can be produced at low cost can be easily imitated (Hausmann & Rodrik, 2003).

In the context of smart specialization, EDP can be defined as a learning process in which entrepreneurial actors in the region gradually discover their priorities in R&D and innovation resources and capacities that can lead to new economic opportunities (Foray, David & Hall, 2009; OECD, 2014). The definition of entrepreneur includes anyone who is in the best position to be creative in the integration of different approaches for new market opportunities such as companies, higher education institutions, public research institutes, researchers and independent innovators (Coffano & Foray, 2014). In principle, private sector stakeholders are to discover and produce information about new activities, and the role of the public sector is to provide conditions for the search to happen, assess potential and empower the actors to realize the potential (OECD, 2014). The policy process must create opportunities and incentives for economic agents – firms, research centers, independent inventors and lead users – who hold information about the technological and market potentials of new domains and new activities to communicate that information to the public agency (Foray, 2016). All quadruple helix partners have a role in the EDP, and it is important to underlie that no single party has more important role than the other (Rodrigues-Pose & Wilkie, 2017).

While EDP is a central tenet of smart specialization, there has been lack of detailed guidance on how regions should initiate and facilitate such a learning process. The key contribution of the first guide, “Guide for research and innovation strategies for smart specialization (RIS3), published by Joint Research Centre of European Commission in 2012, was to outline the different phases for smart specialization as six steps. These are the following: 1) Analysis of the regional context and potential for innovation, 2) Governance: ensuring participation and ownership, 3) Elaboration of an overall vision for the future of the region, 4) Identification of priorities, 5) Definition of the coherent policy mix, roadmaps, and action plan, 6) Integration of monitoring and evaluation mechanisms (European Commission, 2012). The guide itself claimed that the translation of EDP into practical use had proven difficult, because of the lack of easily observable characteristics and indicators associated with it (European Commission, 2012).

The more recent “Smart specialization implementation handbook” (European Commission, 2016) highlights the following four key lessons learnt during the last five years. First, EDP is a cyclical process that should take place in all key phases of smart specialization, from the definition of regional priorities to implementing them and assessing the innovation outcomes. Second, the new role of government is to act as the enabling platform of stakeholder interaction, which requires an increased focus on communication and transparency. Third, it is necessary to adapt EDP to local circumstances, as there are differences in relation to the degree of use of participatory practices, the institutional settings and the entrepreneurial readiness of the actors. Fourth, smart specialization strategy approach has triggered new institutional arrangements for EDP processes to be deployed beyond the regional scale.

The recent book “Governing smart specialization” (European Commission, 2017) emphasizes that “the essence of EDP lies in its interactive nature, and in organizing a fruitful, targeted dialogue that brings the different actors together in a participatory leadership process to carve out jointly the smart specialization fields and develop a suitable policy mix to implement it”. The common pitfalls that plague the implementation of EDP are the lure of top-down interpretations, the different agendas of various RIS3 stakeholders and not keeping EDP open enough for new stakeholders (Foray, 2017). While “Governing smart specialization” provides important insight for various EDP aspects, it does not offer a holistic process model regarding how to implement EDP for regions. In fact, there have been few studies so far tackling this matter. One such study is of Todeva and Ketikidis (2017) that identify four strategic responses to the key challenges identified in the operationalization of EDP, and use them as the bases for their model of entrepreneurial discovery and implementation process. The model proposes key activities for the government to operate stakeholder and capability mapping, stakeholder engagement, business model development and matchmaking between triple helix stakeholders. The authors propose also how to orchestrate in practice such complex interactions with long-term strategic impact, which requires a creation of consensus space driven by political commitment and citizen participation that support triple helix governance platform. Todeva and Ketikidis (2017) further highlight that is ultimately businesses that can take forward strategies objectives, and implement them into collaborative inter-regional agreements. Another study on EDP process by Vivanco et al. (2016) examines EDP from a micro perspective. The authors first divide EDP into two distinct processes - entrepreneurial discovery process and entrepreneurial discovery initiation. The first includes mechanisms through which an entrepreneur identifies a new market opportunity, while the second refers to the process of commercialization of the related product/service idea (Vivanco et al., 2016). The authors claim that while entrepreneurial discovery process is related to micro level (individual initiatives), the smart specialization approach is on a macro level. This contradiction takes it more difficult to analyze EDP in the smart specialization context.

While prior research has provided important insight on what constitutes EDP, we still lack clarity and consensus about the key factors of EDP. It would be important

to develop a holistic process model of EDP that includes the key RIS3 activities. This is the focus of our paper, which aims at clarifying the key factors of EDP. We further provide an example from Helsinki-Uusimaa region in Finland to clarify how to implement the model in practice.

Research methods

We adopted a grounded theory approach (Corbin & Strauss, 1990; Gioia, Corley & Hamilton, 2013) being an appropriate method to examine a phenomenon that is dynamic in nature and for which there exists little prior knowledge. Our research is based on multiple cases, which allow us to compare our findings from different regions. This, in turn, supports the development of a more accurate, generalizable theory than single cases (Eisenhardt, 1989). We utilize semi-structured interviews as our primary data source, which is typical of studies based on grounded theory approach (Gioia et al., 2013).

We identified our sample from Joint Research Center (JRC)'s smart specialization platform (European Commission, 2016) in September 2016. At that time, it included contact information for RIS3 facilitators in 14 out of 19 Finnish regions. We included one additional region in which RIS3 facilitators we had received direct contact information. We contacted the responsible persons by e-mail and proposed a phone interview in September 2016. A few days later we called to those that had not replied to the e-mail. At the end, 10 regions accepted the 1-hour interview invitation, which we considered as a sufficient sample, covering slightly over half of the Finnish regions. All interviews were conducted as phone interviews, except for Helsinki-Uusimaa that was conducted face-to-face as situated in our own region. Table 1 provides a full list of regions that participated in the study, the organization and the title of interviewees and the date of interview.

Table 1. Regional interviews

Region	Organization(s)	Title of interviewee(s)	Interview date
South Ostrobothnia	The Regional Council of South Ostrobothnia	Manager of International Affairs	2016-09-19
South Savo	South Savo Regional Council	Development Manager	2016-09-20
Helsinki-Uusimaa	Helsinki-Uusimaa Regional Council	Innovation Adviser	2016-09-20
Central Ostrobothnia	Regional Council of Central Ostrobothnia	Manager of International Affairs	2016-09-20
Central Finland	Regional Council of Central Finland	Development Manager	2016-09-28
Ostrobothnia	Regional Council of Ostrobothnia	International Coordinator	2016-09-19
Oulu Region	Council of Oulu Region	Development Manager	2016-09-14

Satakunta	The Regional Council of Satakunta	Regional Advisor	2016-09-26
Southwest Finland	Regional Council of Southwest Finland	Senior Planning officer, Senior Planning officer	2016-09-14
Kymenlaakso	Cursor Oy, Kymenlaakso University of Applied Sciences	Project Manager, RDI Director, RDI Expert	2016-09-14

Our interviews were semi-structured, following the questionnaire, but also leaving room for the respondents to express their views openly. The questionnaire concerned the practices, participants and the results of the latest smart specialization strategy round in the regions. In addition to primary research data, we also collected secondary research data such as regional smart specialization reports, presentations and related publications to get further information of regional smart specialization practices. This type of triangulation allows us to validate the findings, as we utilize several data sources (Yin, 2009).

We recorded, stored and analyzed interviews through Atlas.ti software for qualitative analyses based on grounded theory approach. We first identified the activities and statements related to the stakeholder interaction in the context of smart specialization development and implementation. We then coded these activities and statements with one sentence that described the essence of that specific activity or statement. We ended up having altogether 65 such 1st order terms, which we analyzed through grouping similar terms with each other and labelling them under similar themes. These 2nd order themes we then developed into aggregate dimension describing the underlying category. We illustrate our data structure in Figure 1 in the following chapter to clarify the process of our data analyses. We present only a few selected 1st order terms to maintain the readability of Figure 1.

After identifying the data structure, we started to develop a grounded theory model that shows the dynamic relationships between the concepts, themes and aggregate dimensions. The purpose of the model is to show the relationships between the newly derived concepts (Gioia et al., 2013). We present our model in Figure 2 in the following chapter. Finally, we compare our model with existing research to understand how our findings contribute to existing knowledge, which we discuss in the final chapter.

Characteristics of Finnish innovation environment and regional development

Finland has been characterized 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 characterized as Innovation Leader, while the Eastern and Northern part of Finland is characterized as Strong Innovators

(European Commission, 2017). 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, Pugh & Raunio, 2016; Uotila, Harmaakorpi & Hermans, 2012).

Smart specialization approach bares many similarities in terms of the process principles and contents to the program-based regional development strategy work that started in Finland in 1994. The Finnish regions initially adopted different approaches whether to carry out smart specialization as part of existing program-based regional development or as separate strategy work (Nissinen, 2017). Regional Councils facilitate the RIS3 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. It approves the annual Implementation Plan of the Regional Strategic Program, which determines the allocation of both the EU and national financing among the funding authorities. It also discusses the main projects and initiatives of a region to ensure the coordination of different funds and regional measures. (Nissinen, 2017).

According to our interviews with 13 RIS3 facilitators in 10 Finnish regions, RIS3 forms typically part of the Regional Strategic Program. Regional Strategic Program is a legal requirement for Finnish regions. Regions engage a large group of stakeholders in the development work that involves 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 Program work, the Finnish regions have conducted specific RIS3 interviews and workshops as parallel or as a separate process from Regional Strategic Program work. According to our interviews, the RIS3 approach has fostered the international collaboration of Finnish regions.

Findings on key factors underlying EDP in Finland

In order to identify the key factors underlying EDP in the Finnish regions, we analyzed our interview records in Atlas.ti by systematically extracting all activities and statements from our interviews related to stakeholder interaction in RIS3 strategy development and implementation process. Figure 1 illustrates our data structure in which the stakeholder interactions are shown as 1st order codes, their categorization as 2nd order themes and aggregated dimensions.

We formed the 2nd order them "Enabling all actors to participate" through extracting as an example the following stakeholder activities and statements from our interviews: "Different kinds of surveys in Internet with feedback and comment

possibility (2000 people participated)”, “Internet portal for citizens to participate” and “All material in the Internet, open feedback channel to everyone”.

We formed the 2nd order them “Informing and collecting views” based on the following example statements and activities from our interviews: “Kick-off seminar to all triple helix actors in the region, informing about current strategy and pathing for new roadmap”, “Panel discussions with major firms in the region to collect their input and views”, “Survey to all firms with over 10 employees and interviews” and “Meeting different citizen groups in their own events to inform them and collect input”. In a similar vein, we developed the following 2nd order themes “Working together to form strategy” and “Joint discussion of initial strategy draft”.

Related to RIS3 strategy implementation, we extracted for example “Creating networks within actors in the specialization area, firms to visit each other and to solve common problems”, “Bringing regional actors together to think of common interfaces, boosting them to see joint opportunities and committing to these” and “Developing new international networks, partnerships within Baltic Sea and outside Europe”. These we labelled as a 2nd order theme “Creating and strengthening innovation networks/ecosystems”.

In addition, we identified the following stakeholder interactions as examples – “RDI (Research Development Innovation) forum meets four times a year to follow-up the strategy implementation”, “Every second year interviews with key stakeholders to evaluate the progress through gap analyses” and “Innovation alliance for the continuous interaction of partners” and labelled them as “Continuous collaboration”.

Finally, we ended up having six 2nd order themes, which we further developed as aggregate dimensions of “Openness”, “Engaging”, “Focused Networking” and “Continuous Collaboration”. Figure 1 illustrates the example statements and activities as well as the total number of statements and activities found related to each 2nd order theme. We only illustrate a few statements and activities in order to maintain readability of Figure 1. Finally, we came up with four aggregate dimensions, which form the key underlying factors of EDP.

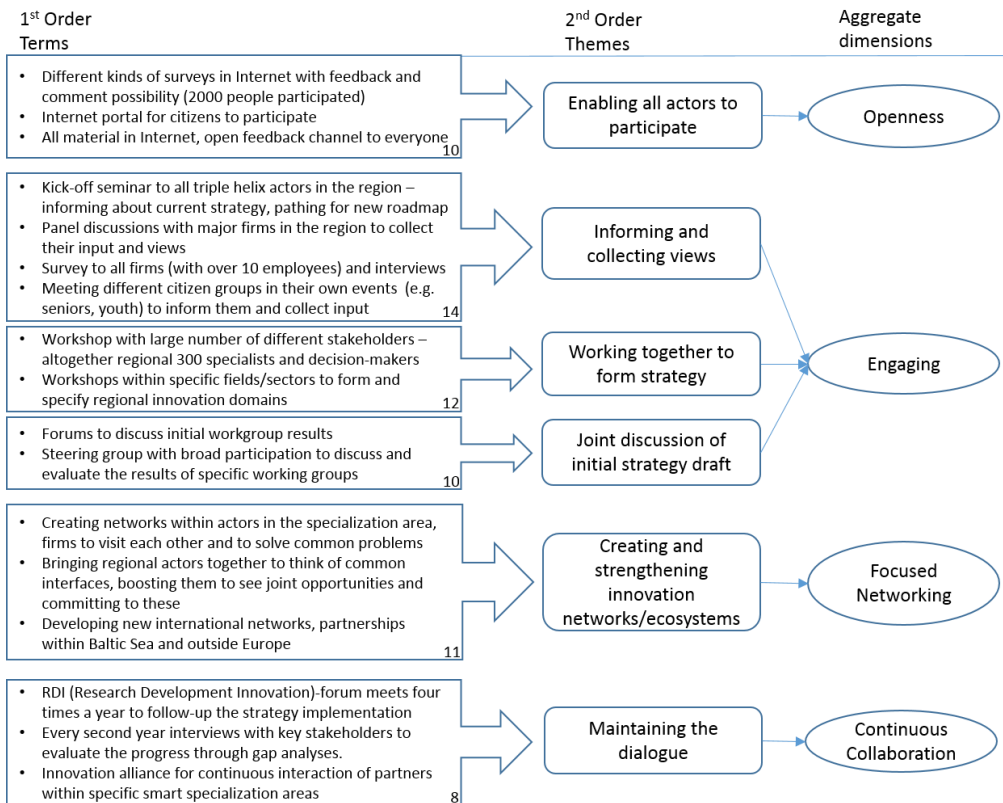


Figure 1. Data structure for identifying the factors underlying EDP

Figure 2 presents the linkages between the key factors of EDP as a cyclical process model. The right part of the cycle refers to the activities in RIS3 development, while the left part of the cycle the activities in RIS3 implementation. RIS3 strategy development involves three key activities that underlie the process of collective regional strategy development for research and innovation. As a first step, policymakers inform about RIS3 and collect views of diverse stakeholders related to the topic. Second, policymakers bring together a group of stakeholders representing quadruple helix partners to identify regional strengths and opportunities and to suggest regional priority areas. In a series of workshops with regional stakeholders, the bases for initial strategy are developed. Third, policymakers collect stakeholder groups to discuss the initial strategy draft and to provide their feedback. The key role for policymaker in RIS3 development is to engage the stakeholders and to facilitate an open and transparent process. The regions can enable openness through having all the RIS3 preparation and process related material as well as all the work in progress documents available in the web site of the region with a possibility for feedback and comments. Thus, all stakeholders can get access to this information and contribute to its development.

RIS3 implementation involves two key activities. First, policymakers are to create or strengthen the existing innovation networks and ecosystems related to key RIS3 priority areas. Typically, this is done through utilizing financial instruments for funding projects that foster regional/national/international innovation networks and thus lay the ground for innovation to occur both within and outside of these projects. Second key activity for policymakers is to maintain the dialogue between the different innovation networks so that they become sustainable. The key role for policymaker in RIS3 implementation is to facilitate focused networking and continuous collaboration. Continuous collaboration is a vital factor of the EDP that lay the bases for the future RIS3 strategy rounds.

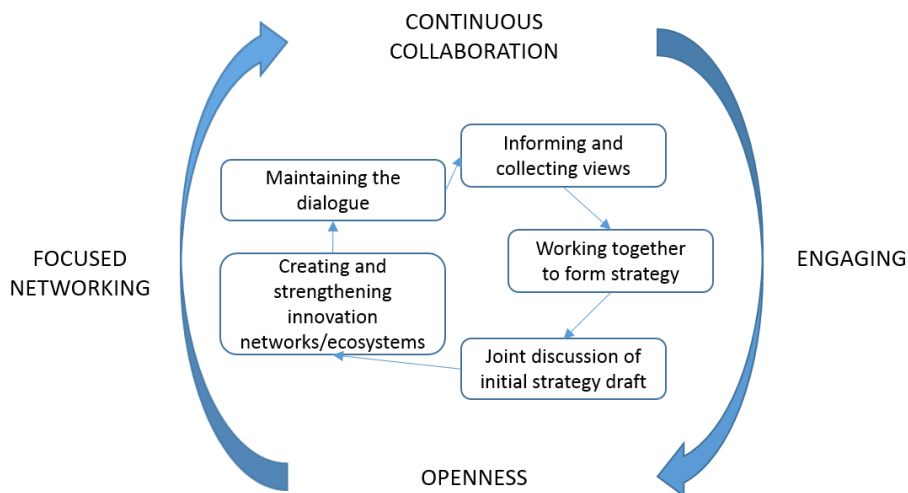


Figure 2. Process model of EDP in the smart specialization context

Helsinki-Uusimaa region as an example

We selected Helsinki-Uusimaa region as an example to describe how the regional council facilitated EDP in RIS3 development and implementation. RIS3 strategy in Helsinki-Uusimaa is based on Regional Strategic Program work and a RIS3 specific study facilitated by a consultant and university partner right after the program work in 2014. The Helsinki-Uusimaa Regional Strategic Program was created in co-operation by municipal decision-makers, developers, industries, businesses, the education sector, the third sector and citizens (Helsinki-Uusimaa Regional Council, 2015).

The first activity informing and collecting views of different stakeholders occurred through scenario work with regional triple helix stakeholders and future assessment project together with two other neighboring regions. There were also separate RIS3 interviews organized with regional stakeholders as part of the RIS3

specific study. The second activity working together to form strategy involved a series of workshops to analyze regional strengths and the potential priority areas. There was also a feedback Internet portal to engage the citizens in this work. The portal provided open feedback channel to all regional stakeholders as well.

The overall goal of RIS3 strategy in Helsinki-Uusimaa region is to develop strong regional innovation ecosystems. The selected RIS3 priorities are Urban Cleantech, Human Health Tech, Digitalizing Industry, Welfare City and Smart Citizen. The Regional Board approved officially the RIS3 strategy in December in 2014. The strategy implementation consists of different projects funded by various financial instruments that aim at strengthening the 'smart' network of the region (Helsinki-Uusimaa, 2017).

The Regional Cooperation Working Group (MYR) coordinates RIS3 implementation and accepts the projects financed by ERDF and ESF. The members of the committee come from municipalities, universities, research institutes and regional and national administration. As an example of focused networking, a RIS3 project of Techvillia supports digitalization in the technology industry and facilitates networking events where different stakeholders' can get familiar with each other through visiting other firms' premises and learning from each other. These networking events offer possibilities to partners to initiate collaborative relationships. Another example of focused networking is the project Health Spa that joins students, start-ups, and health care professionals to solve together challenges.

As examples of continuous collaboration in Helsinki-Uusimaa, there is Smart & Clean Foundation that connects regional actors and finances new innovative cleantech solutions. It aims to make the region an international reference for smart, clean and sustainable solutions. An example of continuous collaboration is the daily work of the regional council that actively participates in the meetings and events of all implementation projects and interacts frequently with the project leaders and participants from businesses and research and development organizations. Furthermore, the regional council is in direct contact with the regional developer community - universities, research institutes, and development organizations - to inform each other forthcoming events and funding opportunities. This close interaction is driven by the mutual benefits of continuous collaboration with the business and the development community.

Discussions

We set out to explore the dynamics of EDP in smart specialization context in Finnish regions. Our research contributes to the current theoretical debate on EDP through identifying the underlying factors of EDP as openness, engaging, focused networking and continuous collaboration. We also develop a cyclical process model that illustrates how these factors link with each other.

Our model has both similarities and differences with EDP concepts and frameworks presented in prior research. At the time of the first RIS3 guide provided by

European Commission in 2012, the EDP concept was still its infancy with lack of observable characteristics and indicators associated with it (European Commission, 2012). EDP was referred to as governance occupying one phase of overall RIS3 development and implementation work. It essentially lacked the dynamic and sustainable aspects associated with our representation of EDP. The recent “Smart specialization implementation handbook” and “Governing smart specialization” are close to our representation as they view RIS3 as a cyclical process in which stakeholder engagement is the core principle. While these both books offer many insights into EDP process, also from the practice, they do not offer a holistic process model for EDP implementation in the context of RIS3.

Related to the existing EDP conceptualizations, Vivanco et al. (2016) take a micro approach and define how the stakeholders within a specific innovation domain (RIS3 priority area) identify the detailed market opportunities and how these opportunities are developed in individual projects for commercialized products and services. We take instead more of a macro approach to illustrate EDP process on a regional level and how it includes the identification of RIS3 priority areas and then the implementation of them through a large set of implementation projects that aim for fostering regional development in terms of innovation. Our conceptualization of EDP is most closely related to the work of Todeva and Ketikidis (2017), which illustrates EDP on a regional level. Todeva and Ketikidis (2017) identify as key factors of EDP the stakeholder engagement and matchmaking between triple helix stakeholders. These bare similarities to the factors of engaging and focused networking in our work. In addition to these key factors, our work also emphasizes the importance of policymakers to facilitate openness and continuous collaboration. Our research provides examples how to engage citizens in addition to triple helix partners in the RIS3 process and to foster openness through having all work-in-progress documents available for all quadruple helix partners to give their comments and views. Furthermore, our model highlights that EDP needs to be a continuous process in order to facilitate regional innovation, which is a factor emphasized in prior literature of for example Grillo (2017), Marinelli and Perinez Forte (2017), and Vivanco et al. (2016)

The key contribution of our research is the development of a holistic process model for EDP based on grounded theory approach. Our research has also practical implications. We illustrate our EDP model through a case example of one Finnish region, which provides guidance for other regions regarding how to facilitate EDP in the context of smart specialization. The main limitation of our paper lies in its focus on Finland. While we have covered the majority of Finnish regions, our results cannot be yet generalized to other European contexts due to their different institutional environment. We recommend future research to test the validity of our process model in other European countries and regions. Furthermore, we suggest future research to examine the engaging part of our EDP process model in a further detail to shed light how to motivate regional stakeholders to participate in the RIS3 process. This issue was not raised in our interviews with RIS3 facilitators, possibly due to the country-specific characteristics of close industry-academia relationships,

and long experience in open and transparent program-based regional strategy work.

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