

Managing Open Innovation Across SMEs: The Case of a Regional Ecosystem

ABSTRACT

Small and medium sized enterprises (SMEs) face the inherent tension of being dependent on external partners to complement their internal innovation activities while having only limited resources to manage such open innovation processes. This tension is augmented in the context of the larger ecosystem of complementary partners in which the SME is active. In this paper, we present a qualitative case study of a particular regional innovation ecosystem, with ten embedded SME cases, which shows how the SMEs perceive and manage open innovation through strong collaboration ties with various stakeholders in the ecosystem, including suppliers and competitors. When managing such open innovation processes, we find a particular set of challenges for the SMEs due to the misalignment between their and the ecosystem's (implicit) business model. More specifically, key findings include the history-dependent innovation processes within the ecosystem, the diverging understanding of the notion of innovation across the ecosystem, constraints of the SMEs' internal organization, and the importance of shared business objectives and leadership on different levels. These findings highlight specific attention points for managing and developing open innovation in a regional ecosystem, where both the SME and the ecosystem levels of analysis need to be considered.

Keywords:

Open Innovation, Ecosystem, SMEs

Managing Open Innovation Across SMEs: The Case of a Regional Ecosystem

INTRODUCTION

Open innovation, which describes knowledge inflows and outflows for improved innovation performance, is widely acknowledged as an important innovation management practice (Chesbrough, 2003; Dahlander & Gann, 2010; Gassmann, 2006). However, many aspects of this field are not yet well explored and our understanding of the open innovation concept is therefore still under-developed (Huizingh, 2011; West & Bogers, 2013). For example, still relatively few studies concentrate on open innovation in small and medium sized enterprises (SMEs). Existing qualitative studies look at tools, methods and social interactions that influence the integration of a particular type of innovator (Neyer, Bullinger, & Moeslein, 2009), and the misalignment between the entrepreneurs' opinions and innovative output (Massa & Testa, 2008). A few quantitative studies focus on trends, motives and management challenges (van de Vrande, de Jong, Vanhaverbeke, & de Rochemont, 2009), and on intermediation and its role in facilitating innovation in SMEs (Lee, Park, Yoon, & Park, 2010; Spithoven, Clarysse, & Knockaert, 2011).

Successful innovation increasingly relies on a more open approach towards obtaining, integrating and commercializing external sources of knowledge (Chesbrough, Vanhaverbeke, & West, 2006; Laursen & Salter, 2006; West & Bogers, 2013). This is very important because *“innovative businesses can't evolve in a vacuum. They must attract resources of all sorts, drawing in capital, partners, suppliers, and customers to create cooperative networks.”* (Moore, 1993, p.3). There may be a particular challenge for SMEs to develop such a network given that they may, to a large extent, become dependent on external sources of innovation to complement their internal knowledge base. As such, SMEs are challenged to find new ways to

organize their innovation activities in the larger context than their current operational scale (van de Vrande et al., 2009).

This paper investigates how SMEs embedded within a larger ecosystem understand and implement open innovation through a rigorous case analysis (Eisenhardt, 1989; Glaser & Strauss, 1967) of ten manufacturing SMEs, which are part of an regional ecosystem in the area of mechatronics. Taking into consideration that generating new opportunities for additional value creation happens much more often in open innovation than while following closed innovation principles (van der Borgh, Cloudt, & Romme, 2012), this paper will explore the SMEs' current open innovation competences and challenges, and how they could improve their performance through various open innovation collaboration modes (Lee et al., 2010). The research specifically explores the ecosystem as a unit of analysis, in which the various SMEs are embedded, and thereby addresses their role in the larger ecosystem of complementary partners (Adner & Kapoor, 2010; Moore, 1993).

The paper begins with providing a theoretical background of the study, including definition of open innovation, which is a context of the study as well as business ecosystem as a unit of analysis. Next, we describe the applied research strategy, including theoretical sample justification, data gathering protocols, and the analytical techniques used to develop the findings. Subsequently, the case study findings are presented, followed by a discussion of the findings. We conclude with a summary of the key findings and implications for SMEs open innovation management in the context of the regional ecosystem, as well as their limitations and possible future research extensions.

BACKGROUND

Open Innovation: State of the Art in Large Firms and SMEs

Open innovation has been defined as “*the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.*”(Chesbrough et al., 2006, p.2). Contemporary innovation model shifts from closed ‘in-house’ R&D to combining both internal and external sources of ideas, technologies and other kind of information that could help companies in their innovation effort. In the open innovation literature, most attention has been paid to the inbound process of knowledge inflows to accelerate internal innovation, with less attention to the outbound process of knowledge outflows (West & Bogers, 2013).

For example, emphasizing external sources of knowledge, Laursen and Salter (2006, p.146) point out that “*searching widely and deeply across a variety of search channels can provide ideas and resources that help firms gain and exploit innovative opportunities*”. Besides, there is an increasing interest in the coupled process of open innovation, which combines knowledge inflows and outflows (Enkel, Gassmann, & Chesbrough, 2009). Such processes tap into a larger literature on inter-organizational collaboration, which has emphasized the general importance of knowledge transfer for innovation and the specific relevant of inputs like time, labor and other resources. Along these lines, studies have shown that inter-organizational collaboration can be an important driver for innovation performance (Powell, Koput, & Smith-Doerr, 1996). Accordingly, firms embedded in networks can leverage their external environment to achieve better innovative output (Weijian Shan, Walker, & Bruce Kogut, 1994).

Initially, open innovation research provided evidence of various positive influences of its adoption in large multinational companies same of them focus on single firms like IBM, Lucent

or Intel (Chesbrough, 2003), DSM (Kirschbaum, 2005), P&G (Dodgson, Gann, & Salter, 2006; Huston & Sakkab, 2006) ItalCementi (Chiaroni, Chiesa, & Frattini, 2011), while there increasingly has also been a focus on cross-company analysis (Bianchi, Campodall'Orto, Frattini, & Vercesi, 2010; Chesbrough & Crowther, 2006; Chiaroni, Chiesa, & Frattini, 2010; Ferrary, 2011). Recent studies started to focus more on implementation of open innovation practices, including in SMEs (see, for example, Bianchi et al., 2010; Lee et al., 2010; van de Vrande et al., 2009). However, empirical research on open innovation practices in this group of firms is still relatively scarce, with a call for further theory-based empirical research (Wynarczyk, 2013).

Building on the increasing interest in open innovation in both large companies and SMEs, a recent study focuses on the effects of open innovation practices in SMEs, relative to large companies (Spithoven, Vanhaverbeke, & Roijakkers, 2013). This research shows that open innovation activities are performed more intensively in SMEs. SMEs are also more dependent on open innovation than big companies, because its practices have much more significant impact on their revenues. In terms of search strategies, which generate innovative turnover, SMEs benefit from them much less than large companies. What is more, the researchers point out collaboration between SMEs and other innovation partners as a mean to foster the introduction of new offerings.

Open Innovation at the Level of Business Ecosystems

While open innovation has received an increasing amount of attention in innovation management research, it is mostly addressed at the company level of analysis, with a lack of research on other levels (West, Vanhaverbeke, & Chesbrough, 2006). One such level of analysis

that relates to the constellation of innovation actors is the business ecosystem (Adner & Kapoor, 2010; Rohrbeck, Hoelzle, & Gemünden, 2009; van der Borgh et al., 2012). One of the original conceptions of a business ecosystem was first developed by Moore (1993) who emphasized cooperation and competition that happens simultaneously between companies that coevolve new capabilities leading to new innovations. In his view, *“a business ecosystem, like its biological counterpart, gradually moves from a random collection of elements to a more structured community”* (Moore, 1993, p. 76). He moreover distinguishes different stages of the ecosystem development where different challenges related to collaboration or/and competition may emerge.

There have been different views and related concepts that emerged in the context of business ecosystems. One argument is that an ecosystem is much bigger and richer than a firm's immediate customer-supplier network, but at the same time the perception of its dimensions could differ depending on the point of view (such as a single SME initiative or a collection of multiple large enterprises (Moore, 1996). Considering indicators of an ecosystem, it could refer to a network of relationships that have a future potential regardless of the size of the system (Moore, 1996). Some scholars refer to an ecosystem as a “community” (Iansiti & Levien, 2004; Moore, 1996), although that concept has been ill defined and approach in various different ways, not the least in the context of open innovation (West & Lakhani, 2008).

Business ecosystems can be characterized by consisting of a variety of types of stakeholders, such as suppliers, customers, competitors, universities and other complementors, which all play a different role, relative to the other actors, in the process of creating value (Adner & Kapoor, 2010; Afuah, 2000; Eisenhardt & Galunic, 2000; Iansiti & Levien, 2004; Moore, 1996; van der Borgh et al., 2012; West & Bogers, 2013). In the words of Iansiti and Levien (2004), these stakeholders are *“loosely interconnected participants that depend on one another*

for their effectiveness and survival” (Iansiti & Levien, 2004, p. 5). A prerequisite of a “membership” in this ecosystem is then a certain level of inter-dependency between participants. In the context of open innovation, knowledge becomes an important medium of interaction between the members of the business ecosystem.

METHODOLOGY

The main empirical basis of this study consists of a set of exploratory interviews that were conducted among 12 Danish manufacturing companies (see Table 1) in the Mechatronics business ecosystem in Southern Denmark, which serves as the case in this study. Among these companies, two were micro-companies (below ten employees) and eight were small and medium sized enterprises and two were large companies. Having the ten SME cases embedded in the larger case of the regional ecosystem enabled us to predict similar results across the cases (literal replication) and predict contrasting results for predictable reasons (theoretical replication), in line with case study methodology (Yin, 2003). There are various relationships between companies included in this ecosystem. Some of them belong to different clusters like mechatronic or lean energy –cluster and many different networks like Danish Industry, Rotary Club etc. Employees of these companies also belong to various formal and informal working groups related to e.g. hardware, software, project management etc.

Insert Table 1 about here

The theoretical sample was chosen based on: 1) openness to collaboration with other companies and institutions 2) size and the location of the company. First, researchers tried to select companies that show certain degree of openness for external sources of knowledge. That is why, we have focused on companies that are active in different types of local organizations (e.g. different clusters) as well as those that have documented history of collaboration (related both to core and noncore activities) with other local companies or public institutions (e.g. the university). Second, important criteria were both the size of the company (in order to achieve diversity within the SME sample) and the spatial proximity between the selected companies (the distance between the central city in the region and company should be within a radius of 25 km) (Freel, 2003; Sternberg, 1999).

All interviews were conducted face-to-face with CEOs, managing directors or co-owners of the company and they were combined with visit to their manufacturing facility. Most of the companies were interviewed twice in the period of 3 months. All the interviews were recorded, transcribed and shared with interviewees for data validation. Additional information about the companies was collected from publicly available registers, company web sites as well as documents received from the interviewees.

During the first round of interviews researchers address the questions related to the company itself with their competences and challenges as well as their understanding of open innovation together with related activities or initiatives which have been useful in embracing open innovation. In the second round of interviews the same people were asked more in-depth questions about open innovation and different elements of value chain where it is realized.

The data analysis related to an inductive qualitative study with a grounded theory approach, where researchers tried to extract, identify and develop themes that capture the

innovation phenomenon in SMEs (Dougherty, 2002). In this inductive analysis, we attempted to identify themes of findings from within the embedded cases, while comparing the finding across cases as an analytic technique. The grounded theory approach was reflected in the construction categories of findings by developing categories of information (open coding), interconnecting the categories (selective coding), and building a story that connects the categories (axial coding), upon which the final findings are based (Corbin & Strauss, 1990; Dougherty, 2002). As such, the construction of categories can be seen as an iterative process that establishes common meaning across multiple observations (Locke, 2001).

In the findings section, we use different quotes, which illustrate our arguments. Nevertheless, parts of those quotes, which could indicate the interviewed company, are usually replaced with our comment relating to the category of the provided information.

Sample Description

We noticed that there is a considerable difference between companies that even within the SME range are slightly bigger (have more than approximately 50 employees) and those that micro or just small enterprises. The first group seems to have much better established processes in general and particularly in the area of innovation management. What is more, in some cases it is also positively correlated with the time that they are present on the market, but that is not a rule. Furthermore some of them became a part of an international capital group and therefore have some additional possibilities of financing. One of the biggest challenges for all of those companies is lack of qualified manpower available or willing to work in the region. This problem applies to various areas of engineering. Some of them could foresee some potential challenges in leadership development, especially in terms of managing multinational teams working

simultaneously in different parts of the world. In terms of challenges related to innovation, even though they do not have a problem with incremental innovation (mostly maintenance of current products), they express lack of 'big' ideas for investment.

As for the latter group (micro or just small enterprises under 50 employees), what they underline as their main asset is knowledge (know-how) that they have as well as people that work for them. As most of them create highly customized products, they perceive themselves as highly innovative companies. Moreover, thanks to good references from customers they are able not only to maintain current clients, but also attract new ones. The main challenges that they point out is lack of standardized products and due to that also deficiency of automation in their production facilities. Marketing and business development activities are in their case rather scant. Some of them (micro-enterprises) point out their financial situation as something that sometimes stops them from taking big orders. Nevertheless, they are aware of existence of external funding provided both locally in Denmark as well as in EU zone.

What applies to both of those groups is a good perception of their knowledge and capabilities regarding to their field of operations as well as technologies that they work with. All of them underline high quality of their products and accompanies services as a crucial point in their everyday agenda. They not only seems to have a quite good network of contacts in the region, but also are able leverage from it what gets them new partnerships and orders. Challenges that apply for both of those groups are cost related to manpower and due to that also to manufacturing in Denmark.

FINDINGS

Roots of Collaboration and Knowledge Sharing in the Regional Ecosystem

Some of the recent empirical research on open innovation at the level of business ecosystems has focused on a single large enterprise (Rohrbeck et al., 2009), mixed group of firms (start-ups, SMEs and global enterprises) (van der Borgh et al., 2012), or a comparative case study of two multi-national firms emerged in different European ecosystems (Ritala, Agouridas, Assimakopoulos, & Gies, 2013). Therefore our research aims at filling the gap by providing studies of an open innovation ecosystem, where the central point of attention is directed to inter-firm relationships between various SMEs co-existing and co-evolving in one ecosystem. Our research builds on prior findings on embracing open innovation paradigm (Rohrbeck et al., 2009), value creation (Adner & Kapoor, 2010; Ritala et al., 2013; van der Borgh et al., 2012) and value capturing mechanisms in the innovation ecosystem context (Ritala et al., 2013).

The choice of the ecosystem has its justification in Danish culture and history, as well as in the evidence of regional good case practices. Denmark has a tradition for democracy and social responsibility based on trust to individual and to the society. The roots of the Danish co-operative movement called “Andelsbevægelsen” goes back to the middle of 19th century, when Danish farmers wanted to move from production of wheat to breeding pigs and dairy products. The change required big investments in equipment that the individual farmer was not able to handle, but through collaboration and collective investments purchasing machinery and creating commonly owned dairies were made possible. The farmers helped each other to get through the crises and the co-operation showed to be much more effective, innovative and fairly comparable to private or state institutions.

Similar situation took a place in the '70ties, when the energy crises again asked for alternative solutions. That time co-operations were made around power planted heat solutions, which have showed to be very innovative and effective, in such a way that these are still supporting more than 60% of Danish green energy. The principles of “Andelsbevægelsen” are the joint property, with assured an individual freedom and flexibility. The common production secures economics of scale in a common organization that are robust to governmental and other bigger institutions.

It has been observed that very close collaboration between companies is not only Danish historical heritage, but those inspirations are still present in the industry. Some recent evidence from 2006 shows that in order to overcome manpower issues 5 local companies (including Company D & Company G) initiated a project, which aimed at sharing 6 mechanical specialists. An interesting part of the project is the fact that not all of these companies had mechanical engineers employed at that time; only 4 of them were able to ‘supply’ the manpower to this initiative, so for one year specialists from 4 companies worked on projects coming from 5 partners. Thanks to this skills ‘sharing’ specialists were put into an improved work environment, where they could discuss and solve engineering problems within this experts group. This archival evidence together with the data gathered during interviews suggest that relationships between companies embedded in our case are far above regular cluster networks.

“we are close to each other, we can help each other; outside the framework of the mechatronics also” Company F Interview 1 CEO

What is more, enterprises constituting our sample not only co-exist in the similar region, but due to interdependencies they also coevolve together. Current network of interdependencies, mapped based on interviews and secondary data sources is present on the Figure 1.

 Insert Figure 1 about here

Understanding of Open Innovation Across the Ecosystem

While the SMEs in this ecosystem highly depend on each other, the empirical evidence also reveals that the perception of what constitutes innovation differs substantially across this group. This difference appears to be strongest for SMEs that are active in different types of business, although all remain within the field of mechatronics. The most significant differences can be observed in companies selling their products on regulation driven markets.

“Innovation, in my view, is just having the right products at the right time. I mean, you may have a very, very smart solution but if it’s 5 years too early, I mean, there are no customers for it. So, what we do to be innovative is always to look at where the market is heading.” Company D Interview 1 Development Manager

Various governmental regulations that a company is exposed to could be perceived as an opportunity, which could easily turn into threat. Knowing the future directives gives a chance to gain competitive advantage based on competencies and R&D performance. However, if anything unexpected happens and the new product could be too radical to comply with set standards it will be automatically rejected from the bid.

Some SMEs perceive customization as process of delivering a novel solution (usually both to the company and to the market), what in this case could be perceived as product innovation:

“we do that every day (...) the guys they don’t make anything else than new parts, so they do new parts and drawings and development and innovation every day, that’s actually also one of our strengths that we are able to make a solution for the customer” Company A Interview 1 CEO

In the context of open innovation, there is moreover a strong link to customers and their expectations, which a company tries to fulfil by creating a value added product;

“I think real innovation starts with what it is that the customer needs, and then we can say ok, how should we fulfil it (...). It’s not actually always what we are doing, we have one product that is new, and none of our competitors have.”

Company C Interview 1 Managing Director

Besides, the involvement of employees in the decision making process it is also important in the innovation process. This is also mirrored in the company’s strong focus on recruiting people, with some new (to a company) knowledge and skills.

“And we have from the beginning also been very focused on innovation we joined innovation camps - some years ago decided not to continue with this competition - but we still use what we have learned from that time having this whole organization to bring up ideas and have it structurized so it’s not up to two or three managers to come up with new good ideas, but it is instead the whole company.”

Company E Interview 2 Managing Director

Another perception of open innovation is also related to the knowledge that current or potential customers could provide for the new product development process. One of the threats in the traditional (closed) innovation model used to be divergence between customers’ needs and the product features. Not all of the interviewed companies would agree that special customers’ involvement in the product development process would give satisfactory results. According to the Managing Director of Company E listening to the customers may not be enough.

“I used to say a phrase from what Henry Ford said “If I have asked my customer what they really wanted? They would have said a faster horse,, because they didn’t know it was possible to make a car. So nobody was asking for a car.” (...) if you are only doing what you asked to do, we don’t really do innovations. Because you have to bring in (....) the need, the problems that have to be solved, you need to get from A

to B. It is not a faster horse you actually need. You need to get from A to B if it was back in Henry Ford's time. And then you have to bring in new engineers and the technology how can we do this." Company E Interview 1 Managing Director

The problem may lie somewhere else as the user is pointing out. What is more, in his view the company has to have its own contribution to the solution.

"I would not say if we are only doing what you asked us to do, we don't really do innovations." Company E Interview 1 Managing Director

"(...) our main target is always to create value for our customer and their customers. Because at the end of the day we all trying to create added value for the end customer. (...) So we need to have the knowledge and what is the demand out there and to have this cooperation with our customer and to bring in our own ideas. And not just only do what they all ask us to do but also bring our own ideas."
Company E Interview 1 Managing Director

Rahman and Ramos (2013) while exploring challenges in adoption of open innovation strategies in Portuguese SMEs found out that one of the general constrains was lack of market demand implied by low purchasing power of customers. This article suggests that SMEs may not necessarily understand customer needs well, which could be resolved by better implementations of open innovation principles. Our study complements the survey conducted by Rahman and Ramos (2013) by providing different explanation of the demand issues. Some of the interviewed ecosystem members brought up the topic of challenges related to market and customer readiness to understand and buy the technologically advanced products. This would usually not be that big problem in case of large companies, but it could be a meaningful obstacle for SMEs. In this respect we have identified two challenges. First is to create market demand and convince customer to buy. There are a lot of investments that companies have to make not only to develop the product, but also to reach the customer.

“Test facilities, prototypes, when you have the product you still need to develop the market, so it is not only product development.” Company E Interview 1 Managing Director

“Then we also try to influence the market by visiting conferences and doing speeches at transport conferences. So, we try to sell them this idea of modular solution and we try to tell them why we think it is a good idea to have a modular concept, instead of one of the projects.” Company D Interview 1 Development Manager

“We are creating a demand. Before us there would not be [product name] in any other Danish city” Company F Interview 1 CEO

Second, and related to the first, is a creditability of (sometimes) unknown SMEs.

*“The biggest challenge for a company like ours is the credibility in the outside, which makes it possible for you to sell to bigger player than yourself. This is always a problem for an entrepreneur in a niche market – why should we believe in you. “We don’t understand your technology, we cannot the evaluate it. So, we have to kind of rely on you.” (...) Building credibility in the outside is a big challenge. Then, of course, the finance, but those things are connected, because if you are credible, you can borrow money. “*Company F Interview 1 CEO

“If you are a smaller company, you go to the market, you knock the door and they ask we already have anything, why should we buy things from you? We are better in this and this, so if we have a package, we can be better. That’s the strategy problems we have in small countries.” Company G Interview 1 Managing Director

„Trust as a key challenge in doing business.“ Company A Interview 1 CEO

Organizing for Open Innovation in the Ecosystem

Efficient utilization of external knowledge sources seems to strongly contribute to open innovation development in SMEs. SMEs appear to be more aware of outsourcing opportunities,

because due to their size and financial resources they have to outsource R&D or manufacturing of some products (Teirlinck & Spithoven, 2013).

“Well, I think we should be better at not inventing everything ourselves, but more using what’s available out there.’ (...) The system, the solution we supply is a combination products we develop ourselves and products we just buy and modify because, we are only [xxx] people here so we can’t invent or develop everything ourselves.” Company D Interview 1 Development Manager

“(...) that time outsourcing was not a word, it was not known, but we just did it. And we were building up this relationship; it’s still today the partners we have. A better if you use the world suppliers” Company G Interview 2 Managing Director

Sometimes outsourcing of various parts of the business could be a way for an SME to focus on developing core competencies;

“(...) we did a lot of different things and we were not really good with anything of it because we were trying to do everything. So, what we decided in the beginning of 2000 was to really focus on one business (...), we had a quite good success with focusing on we took a lot of our existing products a lot of existing customers and also employees and we moved them to another company in Sønderborg and said: ‘you can have our product and customers for free if does only one condition and that’s you can serve our customer for the next three or four years.’” Company E Interview 1 Managing Director

Here, it can be observed that this development could lead to specialization.

“We are very specialized in this field so... And that’s why I think that a lot of Danish companies should move to this specialized or experts in a certain area.” Company D Interview 1 Development Manager

Also knowledge from various sources is crucial for SMEs performance. For some of them, networking and good references are the main ways of acquiring new customers. Nevertheless,

for some SMEs suppliers are even more important than customers, because without them they would not be able to deliver any products.

“Our suppliers are very, very important, without good suppliers we could not exist.”

Company A Interview 2 CEO

Good relationships with suppliers could not only allow better knowledge inflows to the company (present in new smarter ways of designing products), but also it could be a matter of saving money. It may be the reason why for some SMEs suppliers are not only a part of their vertical network, but an important business partner, which helps the SME to develop and deliver a value proposition to the customer.

“(...) we don’t have suppliers we have partners.” Company G Interview 2 Managing Director

“The suppliers are making the research to make the products we need. And in this case, company like [supplier’s name], where we got robot technology, and then we are working together with them, the reason is not we want to take their knowledge of robot, and put into our own house. We want to work together, to create solution together for our customers.” Company B Interview 2 Technical Manager

This very special perception of “collaborators” could play an important role in the open innovation ecosystem. Our empirical evidence points out that, even if most of our interviewees are suppliers to some large enterprises (see Figure 1) or have some sort of partnerships relationship, they do not consider themselves as equals, which is in line with Narula (2004) who points out that SMEs “have relatively little to offer” (Narula, 2004). Our empirical evidence from interview with Company G illustrates this situation very well:

“ (...) if you work in a company like [Company K], or like [Company Z] then you have to have different in your class and they have very different focus and very different perspectives and they know where to go and how to go and so on so forth.

And that's exactly the difference between SME and the big companies, the entrepreneurship in the companies, the entrepreneurship and the innovation, sorry to say that but they don't belong to very small and high tech companies. They are not interested in what we are interested in, so we have tried so many times to cooperate with [Company K], we have had many more experiences with [Company Z], every time we failed. And then we can say why we failed. Is it their fault or our own fault? Or both together? But why we are not fitting, but it doesn't matter cause it's not working." Company G Interview 1 Managing Director

Due to their size and financial capabilities SMEs are willing to cooperate not only with complementors, but even with the competitors (Ritala & Hurmelinna-Laukkanen, 2009); both solutions have their roots in increasing needs to acquire multiple competences (Granstrand, Patel, & Pavitt, 1997; Rothwell & Dodgson, 1991). In their world, we are not necessarily talking about zero-sum game, when one has to lose to the other to win. If none of suppliers is able to handle the order it may be better for them to collaborate and share the money than fight and be left with nothing. Therefore, even a competitor has the potential to provide additional resources, which can contribute to mutual benefits (Kogut, Shan, & Walter, 1992; Lee et al., 2010) . An illustration of this case is nicely exemplified by the interviewee arguing that collaboration with competitors is not easy, but durable:

" (...) it's difficult, you need to trust, you really need to trust, but my theory is that instead of being two small companies which would not be able to take a big order then put yourself together with another company and take any order, which any of us would have had anyway, instead of competing for projects and customers saying your too small then do it together and (...) My theory is if we work together we can make really big stuff down here, but if you need to do it separately it would not be possible." Company A Interview 2 CEO

Most of the SMEs in the ecosystem underline customization as their main strength. Literature reports that level of flexibility together with an ability to adjust the product according to customer needs make a significant distinction between SME and a large company to the advantage of the first one (Narula, 2004). However, some of the ecosystem members found a way not only to keep this flexibility but also to combine it with scalability through mass customization platforms.

“I think we found a niche where we don’t have any competitors to do the exactly the same as we are doing (...) we use the same platforms for different customers. So we have small adaptations or sometimes in brackets only software that is the difference between products and even in the software we may be use the 80 percent of the software as the same for the different business area. So we can mass produce and have a small customization in the display, or in the box, or in the label, or in cabinet, or in the color, but not in the basic product, because that is expensive to make a new platform.” Company E Interview 1 Managing Director

“we created this new platform (...) And it is flexible, (...) scalable”
Company D Interview 1 Development Manager

Prerequisites for Ecosystem Development

The interviewed companies indicate several factors, which could possibly facilitate better future collaboration and value creation in the ecosystem. First of all, they follow very much the stream of literature related to innovation ecosystems. In order to create and hopefully also capture value, ecosystem members have to share business objectives and innovation-driven goals (Adner, 2006; Adner & Kapoor, 2010; Ritala et al., 2013).

“ (...) you have to really specific what is your goal and you have to really focus on something that people can find themselves, and you have to have a not short term,

not a very long term but a something between that can fit into, and they can say that's something for me," Company G Interview 1 Managing Director

"So I think what you need to do is make sure that everybody knows what the goal is where to get, and really focus on the milestones (...) cause otherwise they will be used a lot of time and there will be no outcome. That's my opinion " Company A Interview 1 CEO

Some of the interviewee suggests that this goal should not be on the technology level, but more on the product level:

"(...) I think it is easier to make a cooperation when you have a product that we want to do together. And not only a technology, I think it is a bit more difficult, (...) if are doing some product development together where all companies, either sub-supplier to main company or supply part of the product then you really have a strong incentive, for doing this." Company E Interview 1 Managing Director

Literature reports that collaboration on the technology level is a popular domain of interaction between large and small firms, where typical modes could be: licensing agreements, joint ventures, sponsored spin outs (Rothwell & Dodgson, 1991).

The ecosystem literature indicates the importance of a leader, or so-called "central ecological contributor", which is a driving force of the whole community (Moore, 1993). A natural leadership in various ecosystem examples is taken by a large company, which not only has necessary resources, but usually also performs technology leadership (Adner & Kapoor, 2010; Iansiti & Levien, 2004; Moore, 1993). As mentioned in the previous section even though SMEs tend to undertake open and collaboration focused approach, they also see potential barriers related to closer collaboration with large enterprises. What is more, despite the fact they also recognize different working style, and other potential challenges, the university is also seen as an important partner.

“There is so much good knowledge in the university and there are so many good people in the university, the university needs the industry and the industry needs the university.” Company G Interview 1 Managing Director

Another factor important for ecosystem development and collaboration is commitment and sense of ownership of joined initiatives;

“ (...) you need a commitment from the very top of each participating company. And this means the guys who own it. It’s not enough the guys to run it, because they don’t want to engage in this kind of stuff.” Company F Interview 1 CEO

As well as either a monetary reward, which lowers the risk of time investment or a reasonable work load for the initiative otherwise the initiative will be prioritized low and worst case scenario will take a place.

“(...) Look at this argument. You two days late on the last delivery and you spend all your resources on that ‘maybe project’ over there. Don’t do that. Focus more on what you have to do today.” Company F Interview 1 CEO

Some of the interviewees brought the topic of competencies, which are very specific for the region and particularly present in the ecosystem. Their way of thinking seems to very much align with the “smart specialization” concept, which goes far above company level and touches upon activities, which could lead the region to specialize both in R&D and innovation (Foray, David, & Hall, 2009). The concept has a strong link to regional policies, which should prioritize developing of “*distinctive and original areas of specialization*” (Foray et al., 2009).

“But also the area we live in have some unique competences. We have a lot of power electronics industry. We have also actually a low power electronic experience and we have very good software people here. We have a lot of (...) good infrastructure. There is a university,” Company F Interview 1 CEO

"(...) we have few things that are really good in this area. The electronic is one point, but the electronic for the buildings. Energy, that's really an area that we have a lot of people here, in this area, smaller companies, they are very deep but very small in portfolio. So if we took the challenge in this region, together within the university, to put focus on the building and energy, so you have much backup and experience to develop positive energy and new solutions which could not only be sold in Denmark but also exported, not from one company, but from the cooperation of the companies." Company G Interview 1 Managing Director

DISCUSSION

This paper has put forward a study of open innovation ecosystem located in the area of Southern Denmark. We have especially focused on the ecosystem level from the SMEs point of view. Our research took a starting point in exploring the historical heritage of cooperative movements in Denmark as well as more recent local initiatives taking a place between different SMEs. Our empirical findings show that these collaborative traditions could have strongly influenced openness and courage of local firms to take a risk of joining various innovative partnerships.

We found that in an innovation ecosystem, there are limits with respect to the understanding of innovation across the ecosystem. Differences in perception of value creation and capturing could have its source in differences between the ecosystem participants' business models, which are defined as the logic of how companies create and capture value through their activities (Zott, Amit, & Massa, 2011). This could explain why for some firms it is not always good to jump to the newest technology, better to have something reliable that will comply with various regulations and directives and what customers will be able to understand. It could also have something to do with existence of various levels of open innovation (Gupta, Tesluk, & Taylor, 2007; West et al., 2006).

What is more, customization or innovation through customization is perceived as user driven innovation, due to users' involvement in development and production process and is perceived by SMEs as one of their strengths. The role of user innovation or involvement creates the need to appropriate process to transfer the users' sticky knowledge to the SME, possibly through the development of (SME) specific toolkits (Bogers, Afuah, & Bastian, 2010; Franke & von Hippel, 2003; von Hippel, 1994). Nevertheless, it is also important to develop the demand on the market and create something new; however this requires trust and creditability, which may be a challenge for SME. Moreover, in the product development process it is not enough to listen to the customers and suppliers, but also have to be able to contribute to the process with your own competences and ideas – otherwise Ford would have to get customers faster horses.

We have also explored how to organize for open innovation. As for technology exploitation, we considered activities that include acquisition of products, services, processes or equipment developed by third parties; outsourcing of upstream or downstream activities; as well as outward licensing intellectual property. We investigated during which stages of the value chain they take place. Despite the fact that SMEs in our researched ecosystem do not have any patents and thus do not license them, they value outsourcing of various activities (Rahman & Ramos, 2013). This happens mostly due to a reverse effect of Not Invented Here (NIH) syndrome (Katz & Allen, 1982) and Not Shared Here (NSH) syndrome (Burcharth, Knudsen, & Søndergaard, 2014). They have neither time nor money to acquire competences from various different fields. Focusing on their core competencies and getting better and stronger in what they already do is for them much more beneficial than trying to do everything.

In terms of technology exploration we focused our research on the sources of knowledge and technologies, activities that enable firms to acquire them (van de Vrande et al., 2009).

Following the Laursen and Salter (2006) and others who build on the Community Innovation Survey (CIS), we take into consideration external sources of information, among which one can find: market sources; commercial labs, private R&D organizations and consultants; institutional sources, government and public research organizations; as well as other available sources like industrial associations, trade fairs, exhibitions, and conferences, scientific journals and trade/technical publications. Our findings show that SMEs from our investigated ecosystem recognize suppliers as one of the key partners in doing business. Suppliers are perceived as partners, which provide not only good service, but also knowledge about newest technology and possible product optimization. Instead of acquiring knowledge by themselves, some companies prefer to cooperate with partners that already have this specific knowledge. Nevertheless, not only suppliers can create be a part of mutually beneficial relationships with SMEs (Kogut et al., 1992; Lee et al., 2010); competitors could do that too. Coopetition, despite of potential risks and disadvantages could be also an effective way of creating innovations (Ritala & Hurmelinna-Laukkanen, 2009). This importance of relationships with different stakeholders (presented on the Figure 1) is very much in line with depth of search for sources of external knowledge leading to increase of innovation performance (Laursen & Salter, 2006).

Both technology exploration and exploitation were additionally investigated in terms of collaborative innovation (Bogers, 2012) with their current or potential partners from the ecosystem. It has been observed that shared goals and business objectives would be important prerequisites for value creation and capturing in the ecosystem (Adner, 2006; Adner & Kapoor, 2010; Ritala et al., 2013). Additionally, ecosystem members would expect good communication across the ecosystem as well as a driving force of joint activities. All those findings indirectly imply the leadership of the ecosystem as an important part of management of inter-company

initiatives. Some of the companies indicated local corporations as socially responsible for supporting those initiatives, but taking into consideration both perception differences as well as power imbalance large enterprises were not viewed as natural leaders, what is in contradiction with Moore's (1996) assumptions.

Last, the empirical findings explicitly touch upon the "smart specialization" concept (Foray et al., 2009). The concept originated from a spatial sector, but recently is raised often in regional context (McCann & Ortega-Argilés, 2013). In order to find the relevant domain, achieve critical size and proper level of connectedness, open innovation business ecosystems could have a very high potential to be considered as places where smart specialization could be initiated and developed.

CONCLUSIONS

Key Findings and Implications

This study explores how SMEs perceive and manage open innovation on the level of a regional innovation ecosystem. Our empirical findings point out that despite of various interdependencies between the ecosystem members, understanding of innovation and knowledge based collaboration may still vary. This may be very much linked to the differences of SMEs' business models, which constitute the overall ecosystem mode of value creation and capturing. Moreover, this could be an important managerial implication for companies that want to build and collaborate in an innovation ecosystem.

Furthermore, different ways of organizing open innovation practices could not only provide a source of knowledge and inspiration for the ecosystem members, but they could also get companies closer in terms of potential partnering in new initiatives. Not only SMEs dependencies of open innovation, but also their openness for collaboration with various partners,

imply that they, and thus not only large companies, are and can be involved in the coopetition relationships, while this could also become the selective domain of SMEs embedded in an open business ecosystem. This could have some very practical implications in terms of future projects and overall initiatives to be undertaken between small and medium ecosystem members.

Finally, our research points out the importance of shared goals in potential collaborative initiatives taking place among the stakeholders of the ecosystem. It also raises the issue of leadership and commitment for those initiatives. This could contribute to the awareness of the policy members and attract some attention of national and regional government for open innovation business ecosystems as potential contributors to the regional development.

Limitations and Future Research

The main limitations of this study are related to the choice of a particular region with special characteristics; in this case a mix of high and low tech embedded in mechatronics. This raises the question to what extent our findings could be replicable for other ecosystems with a substantial number of SMEs. Further research could take into consideration a comparative study of two or three ecosystems either from different countries and thus representing different cultural origins or maybe “mixed” ecosystems in terms of companies’ strategic profile; this could be a mix of high-tech and low tech companies with service oriented enterprises.

Secondly, our study takes the ecosystem, with embedded SMEs, as a unit of analysis for understanding open innovation processes and practices, while further research could focus more on different or maybe also multiple levels of analysis (Gupta et al., 2007; West et al., 2006). Other units of analysis could focus more on the individual level of open innovation in a business ecosystem. This approach could concern managers and company executives and their role in

value creation or in single firm contribution to ecosystem value capturing. Also the role of the “gatekeepers” in managing the knowledge flows across organizational boundaries within the ecosystem could be usefully explored. Another interesting unit of analysis could refer to inter-ecosystems relationships and the way how different ecosystems interact with one another as well as the role of SMEs embedded in various different ecosystems.

Our research findings point out the need of setting clear goals and business objectives for the ecosystem (Adner, 2006; Adner & Kapoor, 2010; Ritala et al., 2013), which imply further investigation of ecosystem leadership and a form of management, which could be suitable for the ecosystem members. Should the leader come from inside or outside of the ecosystem? If an outsider, how would it get the commitment of all members? If an insider, should this person come from a large company enterprise or from an SME?

Finally, our findings highlight the link between open innovation ecosystems and smart specialisation (McCann & Ortega-Argilés, 2013). Further studies could investigate the influence of national or regional innovation systems (Etzkowitz & Leydesdorff, 2000; Lundvall, Johnson, Andersen, & Dalum, 2002) on open innovation business ecosystems. This research on the policy level could also try to take into consideration its influence on SMEs as well, as means of improving adaptation of open innovation strategies.

REFERENCES

- Adner, R. 2006. Match your innovation strategy to your innovation ecosystem. *Harvard Business Review*, 84(4): 98–107.
- Adner, R. & Kapoor, R. 2010. Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal*, 31(3): 306–333.
- Afuah, A. 2000. How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3): 387–404.
- Bianchi, M., Campodall'Orto, S., Frattini, F. & Vercesi, P. 2010. Enabling open innovation in small-and medium-sized enterprises: how to find alternative applications for your technologies. *R&D Management*, 40(4): 414–431.
- Bogers, M. 2012. Knowledge sharing in open innovation: An overview of theoretical perspectives on collaborative innovation. In de Pablos Heredero, C and López, D (Ed.), *Open Innovation at Firms and Public Administrations: Technologies for Value Creation*: 1–14. Hershey, PA, IGI Global.
- Bogers, M., Afuah, A. & Bastian, B. 2010. Users as innovators: a review, critique, and future research directions. *Journal of Management*, 36(4): 857–875.
- Burcharth, A. L. de A., Knudsen, M. P. & Søndergaard, H. A. 2014. Neither invented nor shared here: The impact and management of attitudes for the adoption of open innovation practices. *Technovation*: Published online ahead of print: <http://dx.doi.org/10.1016/j.technovation.2013.11.007>.
- Chesbrough, H. 2003. *Open innovation: The new imperative for creating and profiting from technology*. Boston, MA, Harvard Business School Press.
- Chesbrough, H. & Crowther, A. K. 2006. Beyond high tech: early adopters of open innovation in other industries. *R&D Management*, 36(3): 229–236.
- Chesbrough, H., Vanhaverbeke, W. & West, J. 2006. *Open Innovation: Researching a New Paradigm*. Oxford, Oxford University Press.
- Chiaroni, D., Chiesa, V. & Frattini, F. 2010. Unraveling the process from Closed to Open Innovation: evidence from mature, asset-intensive industries. *R&D Management*, 40(3): 222–245.
- Chiaroni, D., Chiesa, V. & Frattini, F. 2011. The Open Innovation Journey: How firms dynamically implement the emerging innovation management paradigm. *Technovation*, 31(1): 34–43.

- Corbin, J. & Strauss, A. 1990. *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA, Sage.
- Dahlander, L. & Gann, D. M. 2010. How open is innovation? *Research Policy*, 39(6): 699–709.
- Dodgson, M., Gann, D. & Salter, A. 2006. The role of technology in the shift towards open innovation: the case of Procter & Gamble. *R&D Management*, 36(3): 333–346.
- Dougherty, D. 2002. Grounded Theory Research Methods. In Baum, J A C (Ed.), *The Blackwell Companion to organizations*. The Blackwell Companion to Organizations. Oxford, Blackwell.
- Eisenhardt, K. M. 1989. Building theories from case study research. *Academy of Management Review*, 14(4): 532–550.
- Eisenhardt, K. M. & Galunic, D. C. 2000. Coevolving: At last, a way to make synergies work. *Harvard Business Review*, 78(1): 91–102.
- Enkel, E., Gassmann, O. & Chesbrough, H. 2009. Open R&D and open innovation: exploring the phenomenon. *R&D Management*, 39(4): 311–316.
- Etzkowitz, H. & Leydesdorff, L. 2000. The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university-industry-government relations. *Research Policy*, 29(2): 109–123.
- Ferrary, M. 2011. Specialized organizations and ambidextrous clusters in the open innovation paradigm. *European Management Journal*, 29(3): 181–192.
- Foray, D., David, P. & Hall, B. H. 2009. Smart Specialisation –The Concept, Knowledge Economists Policy Brief Number 9.
- Franke, N. & von Hippel, E. 2003. Satisfying heterogeneous user needs via innovation toolkits: the case of Apache security software. *Research Policy*, 32(7): 1199–1215.
- Freel, M. S. 2003. Sectoral patterns of small firm innovation, networking and proximity. *Research Policy*, 32(5): 751–770.
- Gassmann, O. 2006. Opening up the innovation process: towards an agenda. *R&D Management*, 36(3): 223–228.
- Glaser, B. G. & Strauss, A. L. 1967. *The Discovery of Grounded Theory; Strategies for Qualitative Research*. Chicago, Aldine Transaction Books.
- Granstrand, O., Patel, P. & Pavitt, K. 1997. Multitechnology corporations: Why they have “distributed” rather than “distinctive core” capabilities. *California Management Review*, 39(4): 8–25.

- Gupta, A. K., Tesluk, P. E. & Taylor, M. S. 2007. Innovation at and across multiple levels of analysis. *Organization Science*, 18(6): 885–897.
- Huizingh, E. K. R. E. 2011. Open innovation: State of the art and future perspectives. *Technovation*, 31(1): 2–9.
- Huston, L. & Sakkab, N. 2006. Connect and develop. *Harvard Business Review*, 84(3): 58–66.
- Iansiti, M. & Levien, R. 2004. Strategy as ecology. *Harvard Business Review*, 82(3): 68–81.
- Katz, R. & Allen, T. J. 1982. Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R & D Project Groups. *R&D Management*, 12(1): 7–20.
- Kirschbaum, R. 2005. Open innovation in practice. *Research-Technology Management*, 48(4): 24–28.
- Kogut, B, Shan, W, & Walter, G. 1992. The make-or-cooperate decision in the context of an industry network. In Granovetter, Mark and Nohria, Nitin and Eccles, Robert G (Ed.), *Networks and organizations: structure, form, and action*: 25–56. HBS Press, Boston.
- Laursen, K. & Salter, A. 2006. Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms. *Strategic Management Journal*, 27(2): 131–150.
- Lee, Park, Yoon, & Park. 2010. Open innovation in SMEs—An intermediated network model. *Research Policy*, 39(2): 290–300.
- Locke, K. 2001. *Grounded Theory in Management Research*. Thousand Oaks, CA, Sage.
- Lundvall, B.-Å., Johnson, B., Andersen, E. S. & Dalum, B. 2002. National systems of production, innovation and competence building. *Research Policy*, 31(2): 213–231.
- Massa, S. & Testa, S. 2008. Innovation and SMEs: Misaligned perspectives and goals among entrepreneurs, academics, and policy makers. *Technovation*, 28(7): 393–407.
- McCann, P. & Ortega-Argilés, R. 2013. Smart Specialization, Regional Growth and Applications to European Union Cohesion Policy. *Regional Studies*, (ahead-of-print): 1–12.
- Moore, J. F. 1993. Predators and prey: a new ecology of competition. *Harvard Business Review*, 71(3): 75–86.

- Moore, J. F. 1996. *The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems*. New York, Harper Business.
- Narula, R. 2004. R&D collaboration by SMEs: new opportunities and limitations in the face of globalisation. *Technovation*, 24(2): 153–161.
- Neyer, A.-K., Bullinger, A. C. & Moeslein, K. M. 2009. Integrating inside and outside innovators: a sociotechnical systems perspective. *R&D Management*, 39(4): 410–419.
- Powell, W. W., Koput, K. W. & Smith-Doerr, L. 1996. Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*, 41(1): 116–145.
- Rahman, H. & Ramos, I. 2013. Challenges in Adopting Open Innovation Strategies in SMEs: An Exploratory Study in Portugal. *Issues in Informing Science and Information Technology*, 10.
- Ritala, P., Agouridas, V., Assimakopoulos, D. & Gies, O. 2013. Value creation and capture mechanisms in innovation ecosystems: a comparative case study. *International Journal of Technology Management*, 63(3): 244–267.
- Ritala, P. & Hurmelinna-Laukkanen, P. 2009. What's in it for me? Creating and appropriating value in innovation-related coopetition. *Technovation*, 29(12): 819–828.
- Rohrbeck, R., Hoelzle, K. & Gemünden, H. G. 2009. Opening up for competitive advantage- How Deutsche Telekom creates an open innovation ecosystem. *R&D Management*, 39(4): 420–430.
- Rothwell, R. & Dodgson, M. 1991. External linkages and innovation in small and medium-sized enterprises. *R&D Management*, 21(2): 125–138.
- Shan, Weijan, Walker, G. & Kogut, Bruce. 1994. Interfirm cooperation and startup innovation in the biotechnology industry. *Strategic Management Journal*, 15(5): 387–394.
- Spithoven, A., Clarysse, B. & Knockaert, M. 2011. Building absorptive capacity to organise inbound open innovation in traditional industries. *Technovation*, 31(1): 10–21.
- Spithoven, A., Vanhaverbeke, W. & Roijakkers, N. 2013. Open innovation practices in SMEs and large enterprises. *Small Business Economics*, 41(3): 537–562.
- Sternberg, R. 1999. Innovative linkages and proximity: empirical results from recent surveys of small and medium sized firms in German regions. *Regional Studies*, 33(6): 529–540.
- Teirlinck, P. & Spithoven, A. 2013. Research collaboration and R&D outsourcing: Different R&D personnel requirements in SMEs. *Technovation*, 33(4-5): 142–153.

- van de Vrande, V., de Jong, J. P., Vanhaverbeke, W. & de Rochemont, M. 2009. Open innovation in SMEs: Trends, motives and management challenges. *Technovation*, 29(6): 423–437.
- van der Borgh, M., Cloudt, M. & Romme, A. G. L. 2012. Value creation by knowledge-based ecosystems: evidence from a field study. *R&D Management*, 42(2): 150–169.
- von Hippel, E. 1994. “Sticky information” and the locus of problem solving: implications for innovation. *Management science*, 40(4): 429–439.
- West, J. & Bogers, M. 2013. Leveraging External Sources of Innovation: A Review of Research on Open Innovation. *Journal of Product Innovation Management*: Published online ahead of print: <http://dx.doi.org/10.1111/jpim.12125>.
- West, J. & Lakhani, K. R. 2008. Getting clear about communities in open innovation. *Industry and Innovation*, 15(2): 223–231.
- West, J., Vanhaverbeke, W. & Chesbrough, H. 2006. Open innovation: A research agenda. In Chesbrough, H and Vanhaverbeke, Wim and West, J (Ed.), *Open Innovation: Researching a New Paradigm*: 285–307. Oxford, Oxford University Press.
- Wynarczyk, P. 2013. Open innovation in SMEs: A dynamic approach to modern entrepreneurship in the twenty-first century. *Journal of Small Business and Enterprise Development*, 20(2): 258–278.
- Yin, R. K. 2003. *Case Study Research: Design and Methods* (3rd ed.). Thousand Oaks, CA, Sage.
- Zott, C., Amit, R. & Massa, L. 2011. The business model: recent developments and future research. *Journal of Management*, 37(4): 1019–1042.

TABLE 1
Overview of Interviews

Company	Strategic Profile	Interview dates	Position
A	Micro-enterprise	11.03.2013 24.04.2013	CEO
B	SME	15.03.2013 14.05.2013	Technical Manager
C	SME	08.03.2013 25.04.2013	Managing Director
D	SME	15.03.2013 24.04.2013	Development Manager
E	SME	09.04.2013 11.06.2013	Managing Director
F	Micro-enterprise	04.03.2013 08.05.2013	CEO
G	SME	22.03.013 02.05.2013	Managing Director
H	SME	02.04.2013 03.05.2013	Managing Director
I	SME	05.04.2013	Managing Director & HR Partner
J	Large company	14.03.2013 18.04.2013	Site Manager
K	Large company	18.03.2013 06.05.2013	Innovation Director & Head of R&D
L	SME (cluster manager)	06.03.2013 25.04.2013 03.05.2013	CEO

