Building and managing an innovation hub

A case study of the challenges and opportunities faced by a Northern Swedish innovation hub

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Abstract

The concept of innovation hubs are increasingly being adopted by different sectors as a means to accelerate innovation. Previous research on innovation hubs have focused on large-scale and trans-regional hubs on its managerial practices instead of its geographical situation. This paper studies an innovation hub in the Northern Swedish city of Skellefteå, in a region historically relying on heavy industry trying to transform into a high technology economy. The study aims to answer the research question: “what are the challenges and opportunities in building and managing an innovation hub to foster innovation in a geographically isolated region with a relatively small population?” To answer this question, interviews with stakeholders in the innovation hub has been conducted as part of a qualitative case study. The results indicate that the region’s large heavy industry companies provide a fertile ecosystem for startups in the digital industry by enabling the necessary supporting industries and infrastructure. Meanwhile, the lack of certain important elements needed in the startup process, most prominently private funding in the form of angel investors and venture capital, pose challenges to the development of the digital startup community in the region.

Keywords: innovation hub, regional innovation, clustering, network management, open innovation, incubators, accelerators, challenges, opportunities

1. Introduction

The contemporary business environment is characterized by an increasingly dynamic and competitive setting. Globalization has led to harder competition by allowing more entrants to compete in the same markets while cost-cutting through outsourcing, economies of scale and lean manufacturing processes has become standard in many industries. Meanwhile, information costs have fallen with the diffusion of Internet, making markets more transparent and as a consequence, increasingly demanding consumers (Goksoy et al, 2013). These changes in the business environment have consequently left differentiation through innovation as one of very few remaining sources for sustainable competitive advantage. In order to thrive in such a competitive environment, successful and effective innovation practices have become the objectives of many corporate strategies. In many cases, innovation is even a necessary prerequisite for survival rather than a means of getting ahead of competitors because of the disruptive nature of radical innovation. Due to the swift developments in digital and information technology, the expanding integration of IT and ICT in business processes as well as the scale at which they can leverage such processes, digital innovation is particularly disruptive.

This paper addresses the topic of the innovation hub as an enabler of the connectivity of different companies to improve innovation processes, both internally within firms as well as to the network and geographical region in which they are located. Specifically, the paper examines the case of an innovation hub in the Northern Swedish city of Skellefteå in order to
look into the challenges and opportunities encountered in setting up and managing the hub.

An innovation hub is made up of a system of connections that puts individuals, firms, startups, incubators, and accelerators together to transform innovative ideas into technologically feasible solutions. The communication patterns inside the hubs are usually informal and flat so as to foster knowledge exchange and sharing (Giaccone & Longo, 2016). The concept of innovation hubs is relatively new, with the first innovation hub opened in South Africa in 2005 albeit similar structures, especially accelerators and incubators, have been around for several decades longer (Baark & Sharif, 2006). There may be some striking similarities between these concepts, but an innovation hub differs in some critical aspects. Unlike business incubators and accelerators, which typically work directly to assist individual firms to grow, innovation hubs act like a networked platform that blends a diverse range of competences. The aim is to create an ecosystem where collaborations, knowledge transfer and spillover effects can occur in order to spur innovation and business opportunities, thus benefitting the greater network (O’Hare, 2008).

Previous studies have looked into the characteristics, management and design as well as the success and failure factors in building innovation hubs. For example, Giaccone & Longo, (2016) studied the configuration and management of several trans-regional innovation hubs in the United Kingdom. The study provided insights on some potential challenges that these kinds of innovation hubs may face and suggested some recommendations. Such challenges include the identification of the drivers and guidelines behind the design of the hub, extracting value from data collected in the innovation hub as well as capture the innovative ideas generated within the hub by coordinating and orchestrating the network as well as incentivizing innovative behaviors. Furthermore, Chesbrough (2003) has studied the characteristic features of innovation hubs and concluded that its openness in idea generation, collaboration and discussion are key features for their effectiveness in fostering and harnessing an innovative culture.

Because of the changing innovation landscape, internal R&D has often become insufficient to create enough innovative ideas to gain competitive advantage in ever-more competitive and changing markets. As a consequence, firms are increasingly turning towards open innovation, a strategy of innovative activities that involves decentralized collaborations with external partners including universities, peer firms, suppliers and competitors. Ideas generated both inside and outside the company as well as internal and external paths to market are utilized to advance the development of new technologies (Chesbrough, 2003). Innovation hubs have proven to be an effective enabler for open innovation and accelerate problem solving, idea generation and quality of innovations. The application of the concept of innovation hubs has therefore seen significant growth in different sectors, including companies, science parks and universities (Giaccone & Longo, 2016).

In this paper, we focus on the geographical setting of an innovation hub in the Northern Swedish city of Skellefteå, situated more than 700km North of Stockholm, the capital city of Sweden. The municipality has a population of just over 72 000 (SCB, 2017) and is situated in a sparsely populated region characterized by relative isolation with long travel distances to nearby cities. Business activity in Skellefteå is not as frequent when compared to major cities in Sweden, and the city’s economy has historically centered around a few, major heavy
industries, most predominantly the mining industry. The city has in recent years started undergoing a transformation of the business community by introducing a strategy of growing its IT and digital creative industry. As a part of realizing that strategy, Skellefteå municipality set up the wholly publicly owned firm Skellefteå Science City, whose aim is to make Skellefteå a “home for creative and pioneering people” by investing in several projects fostering and facilitating innovation (Science City, n.d.). The Great Northern (TGN), an innovation hub funded by Science City and opened in the autumn of 2016 (and officially opened in January 2017), is one of the most prominent such projects. Its purpose is to serve as a technology, cultural and creative melting pot in Skellefteå where design, technology and business shall blend to form a thriving startup community (Science City, n.d.). The circumstances of setting up an innovation hub in Skellefteå differ from those in which previous studies of innovation hubs have been carried out. The purpose of this study is therefore to explore what challenges and opportunities establishing an innovation hub and fostering innovation in such a setting entails, drawing on the experience of The Great Northern. Hence, the research question that this study aim to address is “what are the challenges and opportunities in building and managing an innovation hub to foster innovation in a geographically isolated region with a relatively small population?”.

In order to answer the research question, a case study with The Great Northern in the Northern Swedish city of Skellefteå was conducted. Six stakeholders relating to The Great Northern and Skellefteå were interviewed, including the business community manager of The Great Northern, the CEO of Skellefteå Science City, the head of trade and business development at Skellefteå municipality as well as the key figures of three companies installed at TGN.

2. Related research

2.1 The innovative environment

2.1.1 Innovation, digital innovation and hypercompetition

Innovation is driven by the ability to see connections, to spot opportunities and to take advantage of them (Tidd & Bessant, 2013). It does not simply mean to create new products or methods but to deploy better solutions that meet new requirements, unarticulated needs, and existing market needs (Maryville, 1992). This can be achieved by more effective products, processes, technologies and business models. One example of technological innovation is digital innovation, which has fundamentally changed the standards of certain business landscapes. Countless examples have proven the powerful influences that digital innovation has made to transform different industries. The publishing industry is an industry where rapid digitalization has challenged the role of the historical dominated printed magazines and changed the way of obtaining information (i.e. from printed magazines to digital ones) (Nylén et al. 2014). The digitalization in the music industry has also tremendously reduced the distribution and production costs of recorded music. Meanwhile, the reach and flexibility of the distribution of the music media has drastically increased by allowing individual songs to be downloaded instead of buying the whole album on a traditional physical medium (Prabha, 2013).
In this technology led era, companies strive to become the technology leader in their industries in terms of innovative activities. As a company assumes a leadership position in its respective technological field, this position can turn into a positive externality, derived from its reputation and reliability, and hence increase its profits (Gottinger, 2009). The digital industry is rapidly and constantly developing, subjected to constant disruptive innovations and hence perpetually overthrown industry standards. There is little path dependency to follow with standards and rules in permanent flux, making it hard for companies to sustain competitive advantages derived from innovation (D’Aveni, Gunther & MacMillan, 1994). As a result, the digital industry regularly becomes the subject to hypercompetition, i.e. highly volatile markets characterized by unsustainable advantages and fast-paced competition, due to such new and disruptive technologies.

This increasingly competitive, agile and rapidly developing business environment increases the demand on firms to be innovative in order to remain competitive. Emerging global markets and rapid advancements in technology means markets are becoming ever more competitive. This puts pressure on firms to exploit their full potential in terms of resources and competence in order to foster innovation (Huse et al, 2005). One recent emerging strategy to do so is through open innovation, a relatively new strategy in R&D employed by firms characterized by a high degree of open collaboration with other firms, knowledge sharing as well as the creation of collective intelligence (Chesbrough, 2003). Traditionally, internal R&D has been used by firms as a strategic mechanism for maintaining competitive advantage in their markets. Heavy investments in R&D allowed big, resource-rich corporations to increase their market share by driving innovation while simultaneously creating barriers of entry for new, smaller entrants into the market. A strong pool of capital available for investment in R&D would provide a self-reinforcing anchor in firms’ markets (Chesbrough, 2003). However, the characteristics of the knowledge landscape have in recent years been altered in regards to the logic behind the source and utilization of innovation and ideas. Chesbrough (2003) argues that this shift was initiated mainly by the increased number and mobility of knowledge workers, which made the protection, and control of their intellectual property significantly more difficult. The shift was coupled with the increased access to venture capital, facilitating the financing of new startups and innovative ideas (Chesbrough, 2003). Instead of conducting R&D internally, firms now increasingly make their innovation activities increasingly open and allow for innovative ideas to both come from, as well as be brought to market, either inside or outside the company. This allows companies to increasingly specialize their expertise in more focused areas and obtain the knowledge needed externally rather than developing it in-house. Instead of protecting their intellectual property by locking it up from competitors, firms should make them available to external actors and profit on unneeded innovations by selling them or leasing them out. This increases the speed of innovation, as new ideas are made available, thus reducing the need to develop a full product from start to finish and allowing firms to focus their innovation research towards developing the expertise in which they excel. The mobility and flexibility of such activities are typically enabled by joint ventures, licensing and similar arrangements (Chesbrough, 2003). This new innovation landscape places new demands on firms to organize and manage their innovation activities effectively and according to the changing
2.1.2 Regional development and clustering

Studies on regional development efforts have shown that geographical proximity plays an important role for the success of regional innovation. Krugman (1991) argues that clustering can accelerate a region’s growth due to increased competitiveness of its firms as the concentration of firms in one location also increases the pooled market of workers with specific skills related to the industry. This contributes to a more efficient labour market as the probabilities of both unemployment as well as labour shortages are reduced. Furthermore, a high concentration of homogenous industry firms allows for the development of firms in supporting industries to the clustered industry, providing opportunities for synergy effects. Additionally, and perhaps most importantly in relation to IT innovation, the clustering of firms allows for information spillovers to adjacent firms, thus generating beneficial externalities. According to Shapira (2005), the development of this type of regional stickiness is likely to continue and create increasingly specialized clusters due to its increased efficiency and effectiveness. The economic divergence of successful regions versus less fortunate regions add further incentives for concentration and specialization as more wealth and resources are generated in successful clusters, attracting further capital and talents. These arguments have been used to explain the creation and growth of high technology clusters, such as Silicon Valley, as well as industrial clusters in the United States (Shapira, 2005). This view is shared by Saxenian (1996) who argues that the development of high technology clusters in the United States, such as Silicon Valley, are classic examples of external economies based on industrial localization. According to Saxenian “they are seen as cumulatively self-reinforcing agglomerations of technical skill, venture capital, specialized input suppliers and services, infrastructure, and spillovers of knowledge associated with proximity to universities and informal information flows” (Saxenian, 1996, p. 42). Saxenian also points out the importance of the relations between the agglomerations’ firms and the institutions and social structures in the geographical area in which they operate (Saxenian, 1996). Salstron (1997) reinforces the importance of institutions in terms of building successful and prosperous agglomerations by pointing out that inadequate institutions have historically been linked as a significant explanatory factor as to why certain regions lagging in terms of development remain lagging.

Innovation networks share many characteristics with clusters but the definition deviates in some respects. As previously mentioned, clusters are agglomerations of interconnected companies and associated supporting industries. Companies in a cluster produce similar or related goods and services and are supported by institutions in the physical proximity. Meanwhile, a network can be described as “a complex, interconnected group or system” (Tidd & Bessant, 2013, p. 302). Firms within a network are more closely related and collaborate with each other, working towards common economic goals. Networks can be designed for innovation to be generated and applied both horizontally (between firms on the same level of the value chain) as well as vertically (between firms on different levels of the value chain).

Networks may also take on different attributes in terms of its connectedness and
openness, where closed networks enforce the protection of its ideas and competitive advantages. Firms in a closed network typically emphasize autonomy and are disconnected from its peer firms as well as other firms in its value chain and its advantage are economies of scale. Meanwhile, an open network allows for knowledge sharing with competitors and supporting markets. An open network gives the benefit of economies of scope and enables the firm to pursue several segments simultaneously while also allowing the firms to engage in, as well as capitalize on, open innovation (Tidd & Bessant, 2013). Similarly to open innovation, open networks also place demand for effective mechanisms and supporting structures for organizing and facilitating innovation and collaborations.

2.2 Innovation hub and network management

Innovation hubs have progressively been adopted by different sectors including firms, science parks and local governments. By doing so, innovation processes can be improved in terms of problem solving (Chesbrough, 2011), enhance informal communication, knowledge sharing and open collaboration (Giaccone & Longo, 2016) as well as idea development (Howe, 2008; Magnusson, 2009) in order to foster innovation activities. Innovation hubs are a relatively new concept as well as form of organizing and academic researchers have begun to investigate its characteristics and provide insights in managing the innovation activities and collaboration within the hubs. O’Hare (2008) describes an innovation hub as a standalone physical entity possessing three specific competencies, namely idea generation, incubation and idea acceleration. Giaccone and Longo (2016) define an innovation hub as a center of research and development of innovative ideas that acts as a catalyst to transform ideas into feasible solutions. Baark and Sharif (2006) also define innovation hubs as a concept with two significant and closely associated characteristics. The first characteristic is that innovative activities are significantly more prevalent in the innovation hub than in the surrounding geographical area. Secondly, there is a strong link and transfer of knowledge into its geographical vicinity. In addition to being the subject of investments in innovative activities and hence to develop and being the source of new knowledge, successful innovation hubs effectively diffuse and adopt new knowledge developed elsewhere in order to accelerate further innovation within the innovation hub.

As previously mentioned, the innovation hub shares similarities with the older concepts of business incubators and accelerators. However, these concepts differ from innovation hubs in certain important aspects. First of all, a business incubator is a firm or organization that typically charges entrepreneurs at the very initial seed stage rent in exchange for its services. Such services include office space, mentoring, administrative assistance and providing introductions with financiers, legal and accounting advisors as well as technology transfer consultants. The time horizon of such collaboration is typically around 1-5 years. Meanwhile, a business accelerator is a short-term (typically three-months) program that instead of charge rent, offer their services in exchange for an equity stake in the startup companies they help. Accelerators offer their client companies similar services but their targeted startups are usually in a slightly more mature stage, where they have developed into the next - early - stage, have a clear business idea and are getting ready to commence operations (Cohen, 2013). The collaborations between the firms and both business accelerators and incubators
have intended finite life spans while innovation hubs tend to grow long-term relationships. Furthermore, innovation hubs aim to create an innovation-facilitating network with a diverse range of members in terms of industries, maturity and size where the value provided is in the network and ecosystem constituted by the innovation hub’s members as well as the extended network of the innovation hub. In addition to ensuring that the necessary supporting industries are in place as well as a diverse composition design of the network, successful innovation hubs must also manage the network’s activities in order to produce the ideal opportunities for maximizing the innovation output of the network. Dhanaraj & Parkhe (2006) suggest in their framework for orchestration in innovation networks that the network design and network management are crucial to its success. According to Dhanaraj & Parkhe, successful network management includes managing the network’s membership (such as size and diversity of its members), network structure (i.e. member density and autonomy) and network position (centrality and status of its members). Meanwhile, good network management activities require managing the mobility of knowledge, appropriability of innovation as well as network stability.

Giaccone & Longo (2016) has looked into several large and trans-regional innovation hubs in The United Kingdom such as the IBM Innovation Hub and The UK National Endowment for Science, Technology and the Arts (NESTA). It provided insights on the hub design and management alongside with three potential challenges that most innovation hubs may face. The first challenge is related to the organizational culture and its members’ attitude towards a high-openness working environment. The second challenge concerns the opportunity of extracting value from big data collected in the hub. The last challenge focuses on the mechanism or system of the innovation hubs in unleashing the innovative power and strengthening trust and reliability among participants (Giaccone and Longo, 2016).

Apart from the research papers that look into the hub’s configuration and management, O’Hare et al. (2008) has studied several innovation hubs which failed at an early stage and the reasons behind their failure, as well as the success factors in building and managing innovation hubs. The authors studied six innovation hubs and found that high expectations and shortsighted goals, focusing too much on idea generation and technology and becoming too big, too soon were some critical pitfalls. If innovation ideas were not strategically aligned with the expected ideas, or the ideas failed to be commercialized within a short timeframe, the owners lost patience, deemed the innovation hub a failure and shut it down. Therefore, managers should pay additional attention to the management of expectations when setting up an innovation hub. Furthermore, the failed hubs tended to focus too much resource on idea generation with a strong technology focus while neglecting to develop the commercialization competencies such as incubation and acceleration. Success factors identified among the innovation hubs include maintaining a low profile, starting small and growing organically, maintaining a close relationship with the core organization and building a diverse and balanced range of competencies.

2.3 Research gap
Previous literature has dedicated limited focus on regional innovation hubs and how its historical and geographical setting influences the innovation ecosystem in the innovation
hub and the region as a whole. To our knowledge, no previous studies have examined innovation hubs situated in an isolated region such as the Northern Swedish region of Skellefteå. Furthermore, no studies have been conducted in settings where the innovation hub is used as a vehicle for transforming the local economy from a focus on primary and secondary industry into developing a digital technology industry. Therefore, we have chosen to study the innovation hub called The Great Northern in the northern part of Sweden, Skellefteå. This requires, by one hand, to explore the challenges that the innovation hub faces given that it is situated in the far Northern part of Sweden where business activities are infrequent and, by the other, to look at the historical background of the region to examine its competitive advantages and disadvantages. The objective of the research is to look into the challenges of a remotely situated innovation hub may face and hence provide insight on innovation hubs’ establishment and management to prevent them from ending up in failure.

3. Research design

3.1 Case description
The Great Northern (TGN) is a newly established innovation hub funded solely by the Skellefteå Municipality but at the initiative of a group of local entrepreneurs in Skellefteå. The company Skellefteå Science City was tasked with making the innovation house come to fruition in 2016 and TGN was officially opened on 16 January 2017. It aims to serve as a technological, cultural and creative melting pot in order to form a thriving startup community (The Great Northern, n.d.). TGN aims to achieve this by offering office space, meeting rooms and events to established companies as well as startups and business incubators who are interested in working in an innovation-stimulating environment. The aim is to create a cluster that attracts and gathers the necessary institutions, infrastructure and opportunities for collaboration to build an effective innovation network where the development and sharing of knowledge and ideas is encouraged. In addition to the direct effects from these activities, a secondary aim is for the innovation hub to act as a lighthouse for the startup community as well as the wider region.

The concept of innovation hubs is quite new and complex. Previous studies of the challenges that an innovation hub may face, especially in a small region setting are very limited. Since TGN is situated in the sparsely populated and geographically isolated Northern part of Sweden where business activity is relatively limited, there are some potential challenges that TGN may face in terms of its geographical location. These include issues such as customer relation management and generation, funding and talent acquisition.

3.2 Research approach
This study requires extensive in-depth information about individuals’ subjective interpretations and how they perceive their social reality. Thus, a qualitative case study research approach was adopted since the case study is an effective tool for investigating a contemporary phenomenon within its real-life context (Yin, 2003). We have chosen to conduct interviews as the source of evidence and the main data collection method in this
research. More specifically, in-depth and semi-structured interview were carried out when collecting the data. Interviews were conducted as guided conversations rather than fully structured queries with open-end questions. The reason for employing this method is that unstructured interview allows greater flexibility in discovering understandings and meaning (Ritchie and Jane, 2003). It is also insightful to provide perceived causal inferences (Yin, 2003).

A goal-oriented sampling strategy was adopted in selecting respondents for the interviews. Key actors were chosen as interviewees in order to collect broad and detailed findings from different perspectives (Bryman, 2008). A type of snowball sampling was used and the business community manager of TGN, assisted in the process of identifying a suitable and diverse range of respondents within the building. The key actors interviewed were the business community manager of The Great Northern, the CEO of the Science City Skellefteå AB, the head of trade and business development of Skellefteå municipality and three CEOs of the companies that sit and work at The Great Northern. Prior to each interview all interviewees were informed about the ethical principles and gave their approval to recording and transcribing the interviews as well as publishing the results for academic purposes. Five out of six interviews were conducted at the respondent's workplace, The Great Northern, and the remaining interview with the head of trade and business development was conducted through Skype due to the fact that the respondent was forced to cancel the physical meeting at short notice. The interviews lasted between 36 and 58 minutes in length.

<table>
<thead>
<tr>
<th>Date</th>
<th>Length of interview</th>
<th>Function</th>
<th>Company/ Organisation</th>
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<tbody>
<tr>
<td>27 April 17</td>
<td>46 minutes</td>
<td>Business Community Manager</td>
<td>The Great Northern</td>
</tr>
<tr>
<td>27 April 17</td>
<td>48 minutes</td>
<td>CEO</td>
<td>Innan AB</td>
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<td>27 April 17</td>
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<td>CEO</td>
<td>Hello Future AB</td>
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<td>27 April 17</td>
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<td>CEO</td>
<td>Science City Skellefteå AB</td>
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<td>27 April 17</td>
<td>36 minutes</td>
<td>CEO</td>
<td>BI Nordic AB</td>
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<td>03 May 17</td>
<td>47 minutes</td>
<td>Head of Trade and Business Development</td>
<td>Skellefteå Municipality</td>
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Table 1. Descriptive summary of interviews and respondents

3.3 Data analysis method
A qualitative content analysis method was adopted for analyzing the data collected from the interviews. This method is most suitable for analyzing transcribed interviews since it allows researchers to look into the nuances of organizational behaviors, stakeholder's perceptions and societal trends (Elo & Kyngäs, 2008).

All interviews were digitally recorded and the audio recordings were transcribed in detail
and double-checked against the recordings. The interview transcripts were analyzed by capturing the general picture of each interview and comparisons were made between different interviewees to generate not only descriptions but also to identify trends in order to make better conclusions. This initial step helped to enrich the data analysis process and provide guidance for further data analysis. The core meaning of the text was then identified and labels were coded to represent the units of meaning. In the fourth step of the data analysis process, the codes were classified into categories and divided into themes in order to expedite the connection with the study and to create a line of argument (Lundman & Hälgren-Graneheim, 2012).

After conducting the qualitative content analysis, four themes of challenges and opportunities from the data have been identified.

4. Empirical data
This section contains a summary of the responses received and views expressed during the data collection. When analyzing the data, four recurring themes have been identified and evidently of importance from the perspective of the stakeholders interviewed. Therefore, the presentation of the results has been divided into four themes, namely funding; industrial collaboration, network and culture; talent acquisition; and open innovation.

We ask the reader to keep in mind that the purpose of the results section is to only present the data collected as presented by the respondents and thus no analysis will be performed at this stage. Analysis and discussion of the results will be performed in chapter five.

4.1 Funding
The CEO of Innan AB, a small company in the work accident prevention industry, mentioned that one shortcoming of TGN’s work so far has been its work to directly assist him in acquiring finance for his business. Instead, he says, it has been the residents of TGN who have assisted his company with this, and particularly the Arctic Business Incubator, which is an incubator situated within TGN. He mentions that financing is one of the greatest challenges and obstacles against making innovative ideas reality. He describes it as follows,

“there is a lot of reports to do and it makes it very hard to drive your innovation further. You want to focus your work efforts towards your innovation instead of just sitting there and write reports and applications”

He thinks that TGN should work harder towards attracting venture capital and help startups identify grants that they are eligible to apply for.

He also mentions that he believes it is important for venture capital firms from other places such as Stockholm, Malmö and even other countries to come to Skellefteå to familiarize themselves with what is going on and what current as well as future investment opportunities are available in its startup scene. He mentions that the lack of venture capital forces startups in an expansion phase to go to Stockholm, or other places with strong venture capital bases, for funding. When asked what makes him stay in the Skellefteå region instead of relocating his business to a place where funding is available, he mentions the
connection to the local community and the belief that he can make his business a success in Skellefteå as one factor. Furthermore, he states that his clients are mainly in the primary and secondary sector industries. Because Västerbotten and Norrbotten have large mining and industrial sectors, it provides him with a large customer segment. Moving away from the region would also mean to move away from his customers, which would have detrimental effects to his business.

The CEO of Hello Future, a digital transformation firm, who was also one of the private initiators behind The Great Northern also states that attracting funding to a small region such as Skellefteå is difficult. He mentions that it is challenging for smaller places such as Skellefteå to develop and maintain all the elements of a traditional innovation ecosystem. However, he also mentions that other small regions have managed to create successful startup scenes, giving Boulder, Colorado, which has more startups per capita than Silicon Valley, as one example. He means that the traditional idea of digital innovation hubs has been based on Silicon Valley but that view is now being challenged. Although not all elements can be produced in a region such as Skellefteå, it is possible for a smaller region to foster an innovative environment despite suboptimal levels of certain elements, funding and venture capital in particular. Because startups in the Skellefteå region struggle more with gaining access to financing and other supporting activities, it means that the stronger businesses will survive and outcompete the less competitive and serious businesses. As a result, those businesses that become successful and subject to scaling up will be better prepared and fit to compete on a global level. He claims that there is abundance of venture capital in Stockholm that makes it very easy to get funding, meaning that many businesses, which are bound to fail, still manage to get funding.

“It is almost too easy to get funding in some of the more mature hubs. That might be fine as well as it means that more people can try and fail and learn and try again, but it’s definitely the case that entrepreneurs from outside the bigger hubs need to be a bit better than the others to get funding. That is not necessary a bad thing though, it might be good.”

On the question whether the startup scene in Skellefteå needs more venture capital and funding he answers that it would be a necessity for startups to grow. However, most startups in the Skellefteå region are in their early phases but should they reach the scaling stage where they need to expand and scale fast globally, they will need access to a lot more capital than what is available in the region. If they cannot get access to that kind of capital in Skellefteå, it means that they will be forced to relocate. He points out an example where his friend chose to set up two company offices, one in Australia and one in Silicon Valley, because he knew that it is much easier to gain access to funding in Silicon Valley. He means that this kind of structure is one example of becoming creative and getting around the problems faced by startups in smaller regions lacking access to certain elements in innovative ecosystems. He moves on to say that companies with very competitive ideas will always find capital. However, it would be better for the region if that money came from the region.
“If you are a company that really can prove that what you are doing is worth doing, then you will find capital. But for Skellefteå’s sake it would be better if that money comes from Skellefteå because that would also benefit the Skellefteå region. However, from the companies’ perspective, it does not really matter where the money comes from as long as you get access to it.”

Furthermore, considering the fact that funding is a scarce resource, he points out that in addition to attracting more funding, it is also important to use the existing financing more efficiently. He proposes one idea where a type of pre-incubators could perform more initial screening and quick testing of ideas in order to sort out the most promising ideas, dedicate more resources towards them and thereby increasing the success rate of the ideas generated.

“Let us say we are not as good as Silicon Valley and will need to try 10 new ideas before we have one success. If we assume that we can try one new idea per year it may take us 10 years to have one successful idea, but if we can try 20 new ideas per year we may have two successful ideas per year. It is all about the speed, to quickly go through ideas and see which ideas has some sort of stickiness to them, and then push forward and create companies for them. There is no point in getting people to set up companies if their ideas do not fly”

He does however also state that the real problem is not to get funding by venture capital, as venture capitalists typically enter in a later stage once an idea has grown to become a proven viable idea. At that stage, it is usually no problem to find funding. What is needed more, according to him is investors prepared to invest in projects at an earlier stage with smaller sums but while the risk is higher, such as angel investors. He claims that this kind of capital is badly needed, as this is crucial for proving the viability of concepts at an early stage and allowing for it to advance down the pipeline.

The head of trade and business development at Skellefteå Municipality, states that the municipality is aware of the challenges of finding financing for ideas in Skellefteå. However, he says that the municipality should not be directly involved in helping the business community finding funding as market forces should take care of that. He also states that there is venture capital coming to the city, adding that the most recent addition is a new venture capital firm with a capital of 10 million Swedish kronor. However, they are hoping for more private capital to flow into the innovation hub and its residents.

“The Great Northern has only been up and running for a year so it is going to take some time before we find solutions but it is absolutely necessary to find more money for it.”

4.2 Industry collaboration & network
One important central theme to the study is the consequences of the geographical situation of the innovation hub. The consensus among the respondents is that the innovation hub’s
geographical position is disadvantageous, due to the fact that it is located more than 700 kilometers north of Stockholm, which is the political capital and financial centre of Sweden. However, the Skellefteå region’s proximity to mining and several other heavy industries with international connections provides the digital innovative industries with opportunities for business and growth. The CEO of Innan AB says that the mining industry in particular is important for his business as it provides him with customers for his virtual reality work prevention courses. In addition to that, he believes that the presence of these large companies may provide synergy effects and an initial market for the digital startup community in the region.

“Yes I think that is the strength of the Skellefteå region. We have some really good, big international companies like Boliden, who have international contacts. They are willing to try new technology and have the money to do it. That could be a big advantage for Skellefteå”

In addition to the direct benefits of the innovation hub, such as new businesses, another purpose of the innovation hub is its effort of the Skellefteå region to position themselves as an innovative region in order to attract more people and businesses. The head of trade and business development at Skellefteå municipality says that the innovation hub is crucial for the marketing of the region for this purpose.

“The tagline for Skellefteå is “Make room for ideas”, we would like that to become really true. If you have an idea you should stay in Skellefteå and develop your ideas. We would like to develop an atmosphere of ‘Skellefteå loves ideas, stay here, we will help you through the process and the red thread’. You can have a seat at The Great Northern and we will try to help you explore your ideas. So we are absolutely using The Great Northern as a way of marketing Skellefteå.“

Apart from attracting talents to sit at the innovation hub, the CEO of Science City also mentions that they are lacking a comprehensive set of business supporting actors, especially for the banking system. They wish to have more different kinds of companies to sit at the innovation hub to foster regional development. He describes this issue as

“We are now lacking of other kinds of business supporting actors, for example for the banking system. It is important that the banking people know this new business model, we want to teach these established companies this new business model.”

Furthermore, the innovation hub also has the purpose of the region to centralize and gather the facilities of the startup scene in one place. According to the head of trade and business development at Skellefteå municipality, the goal is to make the innovation hub a place where entrepreneurs can find the resources needed to develop ideas and get support for developing their businesses.
“The idea is now that you can go to The Great Northern and they will guide you to where you can turn to get help with your ideas. So I would say that we are not controlling the different functions [of the innovation hub] but we are working together with both Science city and The Great Northern.”

He also continues to say that the municipality is trying to intervene as little as possible in the affairs of the region’s entrepreneurs in order to create a climate that facilitates innovation and new ideas.

“We need to give those people freedom. They need to feel loved and feel welcomed to Skellefteå and no bureaucrat is going to stand in their way. […] We would like to create a feeling that if you have ideas you should come to Skellefteå. We love your ideas and we will help you with the development of your ideas.”

Meanwhile, the CEO of Hello Future AB points out the importance of the history of culture in the region starting with the music scene in the 1980s and 1990s, which then developed into the growth of a digital sector in the 1990s. From his perspective, the digital industry grew to importance parallel and independently of the traditional heavy industries and the mining sector. He means that it is only in recent years that the traditional industries are starting to blend together with the creative and digital industry. Because of the digitalization, it is now becoming more natural for previously unrelated firms, such as technology firms and heavy industry or mining firms to cooperate. Because of the innovation hub’s geographical proximity to the heavy and mining industries, he deems that the geographical location of the hub gives its firms a competitive advantage from other competitors in for example Stockholm.

“It is important to have those meeting grounds with traditional industry so they can come together and having events that attract people and then we can take care of that interest and incubate them here.”

Another issue, according the CEO of BI Nordic, is that it is difficult to attract investors or big companies to establish offices in smaller and especially remote places due to the distances from its customers and head offices.

“Looking back from my experience in the old industry [the telecom industry], I think it’s scarier for investors for instance. I think they may be more afraid to invest in a company that is not so close to a big city from a travelling point of view […] I think that from a top management point of view it might be tough to run things from outside a big city.”

The business community manager of the innovation hub shares the view that the
The geographical setting is challenging in terms of its relatively isolated location. He says that it can be difficult to get clients and visitors to come to Skellefteå due to the inconvenience associated with travelling, and particularly for foreign visitors who have to transit in Stockholm. However, he points out that being situated in a relatively isolated and remote place is not necessarily only bad. Because of the innovation hub’s location, it may serve a central role in attracting entrepreneurs and specialists from the region to gather in one place. By being the central meeting place for innovative businesses and ideas in the region, it creates the conditions for a diverse network where collaborations and knowledge dissemination can happen.

“If all of [the residents] are IT or all are 3D designers or all are photographers, this is not co-working and is not going to be successful. But if one is IT, one is 3D, one is digital transformation, one is a photographer and one is PwC and 3 are startups, then you have a very good balance and a very good chance of success within the house.”

4.2.1 Culture
One recurring theme that several respondents identified as strength of the region is the fact that they perceive it to have a culture of innovativeness and entrepreneurship. The CEO of Hello Future AB says that he believes one of the major sources for the creation of the creative and progressive culture that later grew into the digital scene in the region was the growth of the music industry in Skellefteå in the 1980s and 1990s. According to him, a result of the growth of the music industry was that many young people from the region had the opportunity to travel the world in the 1990s, gaining valuable international experience and bringing them back to Skellefteå. Some of them specialized in creating music videos which led to some of them becoming leaders in the field and this laid the foundation for what later melted into the creative digital scene in the region from the beginning of the early 2000s.

“I think there’s a sort of a DIY culture here. There has never been a lot of things to do here but there has been a lot of possibility, well, ‘do you want to do. Here is 20 kronor, go and do it, pretty much’. I think that culture has been really helpful and taught the young people a lot about entrepreneurship”

The CEO of Science City agrees that the entrepreneurial spirit is one of the strongest advantages of the region and the head of trade and business development at Skellefteå municipality, says that the municipality is trying to foster and maintain a creative and entrepreneurial spirit. The aim is to achieve this through a strategy that ensures a consistent provision of support - “red thread” - to young talents from an early age. He mentions the Skellefteå ice hockey as an example that fosters its young players into a system from an age as early as nine years old which is then consistently maintained up until the highest level of the adult team. A similar system is available in arts such as music, where students may enroll in music schools from an early age and continue to coherently succeeding levels of education. He says that the municipality is now working to develop this kind of “red thread”,

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with support to young entrepreneurs as well and that the innovation hub plays a central role in this effort by acting as the next natural step to take their ideas.

4.3 Talent acquisition
In today’s hyper competitive global economy, one of the biggest challenges of a business to grow and innovation lies in its ability to acquire and keep the right talent. Human resource is the greatest asset and investment to the company, therefore getting the right people in the organization is the key for growing a successful and innovative company.

The CEO of Science City mentions that they have problems in acquiring enough talents to come and work in Skellefteå.

“I think that the challenge we are facing right now is to get a big enough critical mass in this house of actual people working here”

One example that he mentions is the company Hello Future which when they needed more workforce could not get people to move from Stockholm to Skellefteå but they had no problem hiring people and get them move from other countries.

“[Hello Future] needs people with design skills to work in the company and he can’t get them to move here from Stockholm but he has no problem getting them to move from Paris or even from Brazil.”

The CEO of BI Nordic shares the same view as the CEO of Science City, saying that his company had to turn down jobs offers due to the difficulties of finding workers in Skellefteå. He describes it as follows;

“We are already discussing to get more people into the business because we have actually had to turn down work. We have had to turn down requests because we haven’t had the people to do it.”

He continues by saying that on a positive note, the stability of talents in Skellefteå tends to be higher and they tend to stay longer at the positions when compared to other big cities.

“There are less people here if you compare with the big city but also if you look at the statistics, you can see that people are staying longer at their positions. So from a company point of view it’s better because you can invest in people in terms of education and so on, because you will get it back.“

However, the CEO of Innan AB has a relatively positive view in terms of the talent acquisition in the gaming industry in Skellefteå. He believes that talents in the gaming industry who worked or had education in Skellefteå tend to stay and work in the region as the gaming industry is quite mature and developed.
“I think one of the biggest advantages is the gaming education, because a lot of people who are having the education had their degree projects done in companies in Skellefteå. I think a lot of them who are going to the market as employees see opportunities in Skellefteå instead of going to Stockholm or other places. So the companies in Skellefteå are kind of the first one to get hold of them.”

He also mentions that there is a possibility that people from Skellefteå but now working in the gaming industry in Stockholm or other cities may want to move back later in their lives if they see the opportunities of working in the gaming industry in Skellefteå.

“Some people from Skellefteå who are working in Stockholm doing games may want to move back but they want to work with something they used to work for because they found it interesting, if you have companies doing games, they can see the opportunities to move north again.”

In addition to that, he continues by saying that there is a lot more that Skellefteå as a city has to do in attracting talents other than jobs and money. He expresses the issue as follows,

“We can’t forget about these if we want people to move here, a lot of offering other than the jobs and money. I think that’s also crucial, important for some people here who don’t have families; they want to do something except work so I think restaurants and things to do are very important.”

The head of trade and business development at Skellefteå municipality also holds a positive view on talent acquisition in the city. He believes that the innovation hub in Skellefteå has a positive impact on this issue and he has seen many people moved to Skellefteå from different parts of the world due to the great potential that Skellefteå has. He hopes that by creating an innovation hub and its innovative ecosystem in Skellefteå could create a place for young people to stay and develop their ideas in this city.

“Skellefteå really needs young people with bright ideas to stay here and develop Skellefteå. We wanted to create a place where we could say “if you have ideas in this area, stay in Skellefteå because we really appreciate your ideas”

“We have actually seen many people who have moved to Skellefteå because of what is happening now. People from Stockholm, England, Holland and I think that TGN has really helped that. But cities in Northern Sweden have a big challenge with people moving out. People from Umeå, Luleå, Skellefteå, they move to Stockholm, London, or Hong Kong let’s say where they maybe feel that they have a bigger opportunity to express their passion for their things.”

The business community manager of the innovation hub also holds a positive attitude
towards this issue. He points out that there is no problem in renting out office spaces in the innovation hub. In the meanwhile he acknowledges the need to promote the innovation hub further and wider to other parts of Sweden to inform people that there are “flexible seats” available for people who come to Skellefteå to work just for a few days.

“Before I even started the job, they [fixed seats] were all gone – they had all been taken. We also have two incubators, ABI (Arctic Business Incubator) and Krenova, and they are not struggling to get people to come and sit there. We know that we need to go out wider and tell people in Stockholm, Göteborg, Malmö, Eskilstuna, all over Sweden that this house exists. We know that there are people coming here to work, maybe they are going to Boliden or Skellefteå Kraft or wherever. When they finish their hour meeting, they are probably going to sit in their hotel room or Espresso House. They don’t know that they can come and sit here and this is part of our development in marketing, to let people know that we have these seats available.”

The CEO of Hello Future AB, speaking on behalf of his position as one of the founders of the innovation hub believes that they need more talents with innovative idea inputs so that they can test and validate more ideas and incubate those with potentials. He further mentions that they need to organize more events to attract people to come to the innovation hub to talk about their interesting ideas and hence capture those innovative ideas and incubate them.

“We need to create events that attract people that generate interest and then capture that interest in to incubators to help them test those ideas and create companies out of the best ideas and of course help the companies grow”

In addition, the CEO of Science City acknowledge the difficulties to compete with the innovation hubs in Stockholm, which are located at the heart of the country in which most of the business activities take place. Therefore, their strategic plan is to position themselves as an international innovation hub first and hence challenge Stockholm once they become well-known on an international level:

“If we can get news on international level, we can get in on national level.”

4.4 Open innovation
Open innovation is one of the biggest features of an innovation hub and it encourages firms to exploit both internal as well as external sources and resources to innovate. In the setting of an innovation hub, there is a strong link of knowledge transfer where companies do not innovate behind closed doors. Instead, they interact with other companies in the hub to share and assist each other in the innovation processes. 

The CEO of Innan AB states that he appreciates the possibility to get assistance from other companies in the hub, which is quick and accessible. He also points out that the
gaming companies in the house have become very used to cooperating to working together. However, he also raises some privacy concerns that he has while sitting and working in the innovation hub. He explains that people are doing very similar things and using very similar technology in the gaming industry, therefore he does not feel very comfortable when it comes to sharing ideas and details. Privacy is a big concern for him and he is relatively more protective in terms of knowledge sharing.

“A lot of us are doing almost the same thing. I wouldn’t say we don’t trust each other but I think we are not so keen on talking details because we have some issues maybe that if I tell you too much you may be doing that tomorrow, because it’s quite near, because I am using the same expertise and competence that the gaming industry is doing.”

He continues by saying that the privacy issue will be a problem for the innovation hub in the long run and there is a need to formulate legal documents to protect companies and avoid conflicts of interest.

“When we look at the ugly thing, money, when collaboration is turning into something else, you have to formulate it into perhaps some legal documents. If you have joint interest and set up a second company then you need to have share holding agreements because I think there’s going be a problem in the long run when your ideas are making money.”

He concludes by saying that he is not sure if other companies have the same feelings as him towards the issue but he agrees that open innovation is the right way to go for the greater good and it is just a matter of time before this strategy will diffuse and become the standard to share and drive innovation further.

The CEO of BI Nordic does not see the conflicts between open innovation and privacy. He explains that it may be because their business approach is a bit different from the other companies that sit at the innovation hub that they are the only company working with analysis of large databases. However, he is not afraid of sharing what they do with other people and he believes that one cannot do everything so it is important to work together in order to drive innovation further.

“If you’re going to go quick you’ll go alone but if you’re gonna go far you’ll go together with someone. You can’t do everything yourself.”

He points out that the innovation ecosystem is the greatest benefit of sitting at the innovation hub. He explains that the innovation hub organizes events from time to time so he gets to meet and talk to different people. He also thinks that it is very easy to get help from other companies if you need someone with specific expertise or knowledge.

“If I speak to people who are about to start a business I would definitely
recommend TGN because of the innovation environment. Just by going down here when they are having a seminar in the big hall down here you will meet people. Especially when you are new, you are looking for contacts and opportunities. Maybe you need someone with specific skills, maybe you’re looking for people, and it’s a really good and easy way. Even if you’re not really searching for things, as I said you run into people. It’s the environment as a whole.”

The business community manager at The Great Northern is also quite positive about the open innovation environment inside the hub. He mentions that he is very satisfied with the balance of talents in the hub. He further explains that the open innovation ecosystem is well established in the innovation hub and people with different expertise actively gather together for collaboration and knowledge transfer.

“I’m very very happy with our balance in the house. We already see people within the house collaborating with each other and asking, “what do you do – I build websites, I build apps, I’m a VR instructor in health and safety... Oh I know someone you should speak to.”

5. Discussion
Based on the data, we have identified four major challenges and opportunities that the innovation hub is facing. We also observed several opportunities from being situated in a small region. In the following section, we will present our analysis and compare with existing literature that has been mentioned in chapter two.

5.1 Open collaboration and privacy
When analyzing the empirical data it became apparent that open collaboration and knowledge sharing among companies in open office spaces are commonly recurring. Our respondents mention that getting help from people working in different companies is easy and straightforward. Results also highlight that the innovation hub organizes meetings and social events regularly for both internal members and external parties in order to facilitate ideas and knowledge sharing. The fact that the innovation hub invites external actors to the in-house events expands the innovative network of the companies that sit at the hub. It strengthens the link of knowledge transfer and the possibility of future collaborations with companies outside Skellefteå. Interpreting our findings in terms of open collaboration and knowledge transfer confirms Chesbrough’s (2003) theory that suggests several characteristics that an innovation hubs should have, such as high degree of open collaboration, knowledge sharing and the creation of collective intelligence. The Great Northern has a well-established ecosystem that fosters open innovation. However, open innovation comes with the risk of compromised privacy and in worst case infringement of innovative ideas, a fear expressed by one of the respondents that some companies in the innovation hub are working on very similar projects so that he does not feel very comfortable about sharing the details of his own projects. He also reckons that the privacy issue in terms
of open collaboration may become a problem in the innovation hub in the long run. Our findings reveal that potential conflicts may arise if the attitude towards a high-openness working environment differs between members who work at the innovation hub. The organizational culture of each company is different and companies, which sit at the innovation hub, may hold different degrees of openness towards ideas sharing. If companies in the same hub are competing for the same target customers or using similar kinds of technology as their business niches, infighting may occur and the degree of knowledge sharing be impaired as a consequence. The result aligns with the research conducted by Giaccone & Longo (2016) who also raised the concern that differences in corporate culture and members’ attitude towards a highly open working environment may cause conflicts in the innovation hub.

5.2 Access to funding
Besides open collaboration and innovation, our results also indicate that the access to funding is one of the biggest obstacles against the retention of companies within the innovation hub. One of the founders of the innovation hub admits that it is hard to attract funding into small regions like Skellefteå. He further explains that obtaining funding is possible but the competition for funding is harder in small regions than in big cities like Stockholm. Particularly, the availability of venture capital is a big challenge. Companies from smaller cities may be disadvantaged by the fact that they have to work harder and dedicate more resources to find funding than firms in big cities with better access to finance networks. This may eventually lead to inefficiencies, which may hamper the effectiveness of the innovation hub’s activities and its ability to unleash the innovative power of its firms, a challenge observed in other innovation hubs by Giaccone & Longo (2016). Furthermore, addressing the funding issue is important as O’Hare et al (2008) points out that directing too much resources towards idea generation with strong technology focus while neglecting to develop the commercialization competencies is one of the major reasons why their studied innovation hubs failed. One of our respondents also mentions that if companies cannot obtain sufficient funding when they enter the scaling stage, companies tend to leave and seek funding in other bigger cities like Stockholm, London or Silicon Valley. The value of an innovation hub lies in the extent of its networks and resources that improve innovation processes. What make up the networks are companies with a diverse range of competences. Therefore, without these companies sitting at the innovation hub, it can hardly serve its purpose as an enabler of the connectivity of different companies. The difficulty in access to funding in Skellefteå may pose a threat to continued growth of the innovation hub.

5.3 Competition for talents
The current high geographical mobility of labour forces makes it easier for companies to recruit talents from overseas. However it also makes it more difficult for smaller regions like Skellefteå to compete with big cities such as Stockholm. Therefore, acquiring talents to work in smaller regions has become one of the biggest challenges to companies in small cities. Our findings confirm the fact that getting talents to work in Skellefteå is not as easy as in big
cities. the CEO of Science City, the CEO of BI Nordic and the CEO of Hello Future AB have expressed their concerns related to getting people to work in Skellefteå. The CEO of Science City admits that the Science City and the hub itself have not yet been able to attract the desired amount of people to work at the innovation hub. For example, BI Nordic has had to turn down job offers due to the problem of insufficient workforce. Hello Future faced a similar situation where they have had problems competing for talents with companies in Stockholm. Although it is hard to attract talents to move to Skellefteå, the CEO of BI Nordic also points out that once you have successfully acquired talents to smaller region such as Skellefteå, those people tend to stay longer within the organizations than they do in big cities.

Another respondent, the CEO of Innan AB feels quite positive towards the talent acquisition in the gaming industry in Skellefteå. He explains that it is because the gaming industry is quite mature and well developed. In spite of this, he still thinks that there is still some room for improvements for Skellefteå in terms of its supporting facilities in attracting talents such as things to do in spare time for overseas young professionals who do not have families and friends in Skellefteå. In addition, the head of trade and business development at Skellefteå municipality and the business community manager at The Great Northern also hold positive views on the current situation of talent acquisition in Skellefteå. They have seen people moving to Skellefteå from different countries and they believe the innovation hub itself has helped that. We believe that getting talent to work in Skellefteå is possible, however, the local government has more to do in building more supporting facilities in the community in order to attract young professional from other big cities.

5.4 Industry network, location and culture
The geographical location of the hub represents a significant challenge to attracting investments and businesses from outside. For example, as argued by the CEO of BI Nordic, it is especially difficult for firms in Northern Sweden to acquire new customers and difficult for the region to attract large companies to establish offices in cities in the far North of Sweden, far away from Stockholm. However, conversely, the hub is actively attempting to turn these challenges into strengths by utilizing the presence of several large multinational companies already established in the region, most prominently the mining firm Boliden. Their presence provide a large initial market for innovations and attracts supporting industries which create a fertile entrepreneurial ecosystem with a well-developed infrastructure. The CEO of Science City mentions that the big firms have attracted the business supporting actors such as law and accounting consultants. However, they are specialized towards the traditional industries and he deems the knowledge in these fields to be insufficient in terms of IT and digital innovation, specifically pointing out the banking system. The availability of supporting industries with specialized skills needed in a regional cluster is an essential element to its development, as pointed out by Krugman (1991). However, Shapira (2005) argues that these supporting industries may specialize and develop the needed skills over time as a result of information spillover effects occurring as the cluster grows. In this context, the banking industry in Skellefteå should adapt to the digital innovation industry over time according to Shapira’s (2005) theory. However, Shapira (2005) also identifies high concentration and
specialization of knowledge in both the main as well as supporting industries as key factors for regions which have demonstrated positive economic divergence relative to its peer regions, and vice versa. Following this reasoning, the Skellefteå region could enable significant growth opportunities for its IT sector by investing not only in the IT sectors itself, but also in the development of its supporting industries. This theory is supported by Saxenian’s (1996) study of success factors behind the development of high technology clusters in the United States, such as Silicon Valley. Additionally, both Saxenian (1996) and Salstron (1997) identify the importance of close relations between industry clusters and the institutions and social structures in the geographical region in which they operate as success factors. One of the region’s strengths is the close relationship between Skellefteå Municipality and the business community. It is therefore crucial to the success of the development of the region that this relationship is maintained.

The strategy of the innovation hub is to become a central place in the region where innovative entrepreneurs and ideas can be gathered and developed. Several respondents, including the head of trade and business development at Skellefteå municipality, point out that the establishment of the innovation hub will serve several purposes, including to position and market the Skellefteå region as an innovative region in order to attract more talents, investments and businesses. It shall also serve as a gathering place for resources and facilities for the regional startup scene. Both the CEO of Science City and the head of trade and business development at Skellefteå municipality mention the local culture of entrepreneurial spirit as a strength of the region and that the strategy of the municipality is to build on this by ensuring a consistent provision of support - “the red thread” - to young talents from an early age. Furthermore, the municipality is actively trying to create an open and welcoming culture for entrepreneurs and people with ideas to come to the Skellefteå region in order to counterweight the geographical isolation and the innovation hub may prove to be effective for serving this purpose. This strategy of developing the regional innovation by setting up and utilizing innovation hubs and linking and transferring knowledge into its geographical vicinity has previously been utilized to some extent by other innovation hubs and is in line with the successfully employed strategies of other innovation hubs as presented by Baark & Sharif (2006). The authors also state that in addition to being the subject of investments in innovative activities and hence to develop and being the source of new knowledge, successful innovation hubs effectively diffuse and adopt new knowledge developed elsewhere in order to accelerate further innovation within the innovation hub. As mentioned by several respondents, the Skellefteå region managed to foster an established gaming industry that has seen continued growth because of information spillover effects and beneficial externalities. This occurrence has theoretical support as identified by Shapira (2005) and according to theory, the development of this type of regional stickiness is likely to continue and create increasingly specialised clusters due to its increased efficiency and effectiveness.
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| Table 2. Summary of themes identified with respective opportunities and challenges |

### 5.5 Suggestions for further research

The Great Northern’s location is geographically isolated with no larger cities nearby from where supporting industries or infrastructure can be summoned and lacks some important elements of the infrastructure of innovation networks, particularly the access to venture capital funding. For an innovation hub situated in a setting such as The Great Northern, which cannot easily attract more resources, economizing the available resources such as incubation and funding is essential. For this purpose, the process of pre-incubation is highly appropriate in order to quickly screen ideas for potential projects for more efficient use of resources. Pre-incubation means to look at the overall activities that are needed to support the potential entrepreneur in developing a business idea, including its business model and business plan as well as the viability of such plans. This boosts the chances of creating a successful startup (Ryzhonkov, 2013). The need for such a system was raised by one of our respondents, the CEO of Hello Future AB who is also one of the founders of the innovation hub. He points out that the pre-incubation process allows them to more efficiently use scarce resources, by quickly evaluating the feasibility of an innovative idea before investing resources towards commercializing it. This process helps the innovation hub to quickly go through ideas and only incubate those who have higher chance of success in order to minimize the waste of resources. O’Hare et al. (2008) studied failed innovation hubs and one of the reasons of failure is that the innovation hub failed to successfully commercialize ideas so that they eventually had to close down. By pre-incubating, it increases the chance of successful commercialization in the house and reduces the chance of having to close down the innovation hub. He further mentions that the pre-incubation process at The Great Northern is still not up and running yet. The configuration of the pre-incubation process is still in exploration. We believe that it is worthwhile to study the impacts of pre-incubation to this regional innovation hub in several years’ time when the pre-incubation process in the hub becomes mature. Therefore, we suggest further research on the impacts of pre-
incubation to The Great Northern when the system is up and running.

5.6 Limitations
There are some limitations associated with using interviews as a method in the data collection. One risk is the possibility of response bias from the interviewees. In this study, all respondents were stakeholders in the innovation hub studied, either by being residents within the hub, working in management positions in the hub itself or working for the organization funding the hub. Therefore, there is a risk that their responses may have been subject of participant bias. Also, the researchers were offered, and accepted, the help of the business community manager of the innovation hub when identifying suitable respondents and setting up the meeting with them. This may also pose a risk of bias, since the researchers could not verify whether those respondents were the most suitable. However, with the far superior insight into the innovation hub’s organization and members, the decision to accept the assistance of the business community manager was deemed the most appropriate. There is also a possibility of inaccuracies due to poor recall (Yin, 2003). Due to the fact that the innovation hub has been operating for less than a year and that it has been less than six months since its official opening, there is the possible risk that the respondents have not been sufficiently exposed to all elements of the innovation hub, although they may nevertheless be present. Even though some challenges and/or opportunities may have arisen, there is the risk that they may not have been identified yet and thus not been conveyed properly by the respondents. Additionally, the researchers’ inexperience in conducting interviews may pose a risk to the quality of the results.

6. Conclusions
The study intended to explore the challenges and opportunities that a Northern Swedish innovation hub may face. A case study has been conducted with six qualitative interviews as our empirical data collection. Analysis of the results have identified four themes which are of importance from the perspective of the interviewees, namely funding; industry collaboration and network; talent acquisition; and open innovation. Challenges and opportunities identified in each theme are summarized in Table 2.

Some of the challenges discovered are in line previous research, but identified in an entirely different setting. Existing research focuses mainly on large-scale trans-regional innovation hubs in big cities. This research aimed to address the research gap from current studies by looking into an innovation hub that are situation in a small region with unique historical and industrial background. One of the main contribution of this research is to reveal and identify the challenges and opportunities that a relatively small and far-away-from-business-centric’s innovation hub encounters. These include the tensions between open innovation and privacy, the hard competition for funding, the quality of innovative ideas, the stability of workforce, and industry collaboration. It highlights that the geographical situation has a high level of influence on the innovation hub. This study also provide a foundation for further research on the impact of pre-incubation to smaller innovation hubs.
Reference list:


