A matter of External or Internal Network Usage?

A study of the network environment of GE Healthcare Life Sciences Uppsala
ABSTRACT

Current research has pointed out that a subsidiary’s external network, constituted by its suppliers and customers at the local market, is very important for the corporation as a whole. In this study we seek to explore if this is the case for a certain Multinational corporation through exploring the usage of its networks. More specifically how the knowledge within its networks sharing contribute to the company’s innovation development process. A number of interviews have been conducted with personnel at a Multinational corporation, General Electric Healthcare Life Sciences in Uppsala. The results have been analyzed using a theoretical frame of reference covering network theory and a subsidiary’s part in it. Our findings show that even though the external network may play a necessary part, the internal network of a large Multinational corporation is an important resource and should not be ignored.

Keywords: Network Theory, Internal Network Theory, External Network Theory, Subsidiary Role, Innovation Development Process, Knowledge sharing, Network Usage, MNC.
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**INTRODUCTION**

In 1986, Porter made the remark: “*We know more about the problems of becoming a multinational than about strategies for managing an established multinational*”. (Porter, 1986) In *Knowledge flows within multinational corporations* Gupta wrote that Multinational corporations, (MNCs), primarily manage their subsidiaries using a top-down approach and without a deeper understanding of the structure of the MNC and describing its characteristics rather than understanding of the strategic roles that the subsidiaries play within the MNC. (Gupta, 2000) Years later, things seemed to have changed. Today there exists a lot more literature on both managing an MNC and the strategic role of subsidiaries.

Companies with significant growth often choose to either move parts of their company abroad or open subsidiaries in other countries. These companies that are found in different countries all over the world are called MNCs and are defined by a business with headquarters, (HQ), in the home countries that control the subsidiaries in the other countries. The subsidiary is defined as a value-adding unit in a host country. This argument aims to reflect that host countries sometimes have many subsidiaries that have different evolutionary tracks and are independent of one another. (Birkinshaw and Hood, 1998) The view on value creation from knowledge in the MNC has also evolved over the past decades. The subsidiaries play an important role in the innovation development process with regard to accessing, generating and creating knowledge. It is recognized that knowledge received from the HQ is valuable for the subsidiary’s innovation development process. A more recent finding is that knowledge created and accessed from other subsidiaries within the MNC is just as important. (Almedia et al. 2004)

As mentioned above the subsidiary’s role within the MNC has changed and over the years and research has been performed on the structure and strategy of the subsidiary, to classify the MNC. (Birkinshaw & Morrison, 1995, Martinez & Jarillo, 1991) The subsidiary’s impact on the MNC’s performance has been explored in terms of the creation of firm-specific advantages through the sharing of knowledge within the
MNC (Birkinshaw, Hood, & Jonsson, 1998) Given the significance of subsidiaries roles in the MNC’s success, the amount of research on subsidiaries performance is increasing. (Andersson, Forsgren, & Holm, 2002; Venaik et al, 2005).

The challenge of globalizing companies is not to localize where the customers are and sell products there, but rather to take advantage of innovation and ideas where ever they occur within the organization. Indeed, growth-triggering innovation often emerges in foreign subsidiaries from the employees’ closest to customers and least attached to the procedures and politics of the home office. (Birkinshaw & Hood, 2001) Much attention has been given to the area of subsidiary performance and the role it plays in the MNC’s innovation system. It shows that the subsidiaries are indeed contributing to the innovative success of the MNC. (Phene & Almeida, 2008)

A company that fits the framework of an MNC is General Electric, (GE). It is the 6th largest company in the world. (Fortune Magazine, 2012) In 2010 the company achieved revenues of $151.6 billion dollars and were the 14th most profitable company in the world. GE consists of several different businesses in various industries in every part of the world. Everything from a bank, aircraft engines to clean water. All the way from the Corporate Head Quarters in Fairfield Connecticut USA, to the subsidiary GE Healthcare Life Sciences in Uppsala, Sweden. (GE.com, 2012, von Heijne, 2011)

The recent shift in the role of the subsidiary has gone from knowledge exploitation to knowledge exploration (Cantwell, 1989, Pearce, 1989, Dunning, 1994). To sustain competitive, HQ manages the different resources of knowledge within the MNC (Kogut & Zander, 1992, 1996). According to Birkinshaw & Hood (1998) the MNC has evolved from a phase where formerly innovation took place in the MNC’s home country. Today the home country does not have a monopoly on innovation and leading edge thinking. (Birkinshaw & Hood, 1998)

Today it is recognized that new business ideas and innovation can emerge from anywhere in the world, especially from the parts of the organization that are in direct contact with the external network of the MNC such as customers and suppliers. This is the foundation for the argument that subsidiaries no longer should be viewed as
islands, rather as peninsulas and that innovative ideas can emerge from different edges of the corporation and not just from the center. (Birkinshaw & Hood, 2001)

Network theory embraces the fact that the relationships between and within organizations are very important. Assets such as knowledge and information can be gained from other parties. (Håkansson & Snehota, 1989) The relationships in a network is claimed to be composed of mutual dependence among the actors in it (Forsgren et al, 2005) and this mutual dependence will help the actors develop specific capabilities. (Håkansson & Snehota, 1989) The evolution of the subsidiary network is a process that is reliant on how valuable the resources are that the subsidiary possess, which the network model helps to reflect. (Birkinshaw & Hood, 1998)

The purpose of this study is to investigate the usage of a subsidiary’s networks during the innovation development process in an MNC. In order to develop an understanding of the corporation’s network structure and sharing of knowledge we will interview employees at the subsidiary. The study aims to explore if the subsidiary’s network usage is aligned with the theories, which claim that the subsidiary’s external network is of great importance.

Concluding, the research question could be expressed as follows: How do external and internal networks impact the innovation development process in a subsidiary of an MNC?

OUTLINE

The study is structured into five sections. The first section consists of the introduction and describes the purpose of the research as well as the research question. In the second section relevant literature is reviewed and the selected theories are presented. The theories chosen are divided into four sub-headings; The Different Sources of Innovation Knowledge, Network Theory in general, Internal Network theory and External Network theory. The theory section aims at providing the reader with an understanding of subsidiaries of MNCs and their networks. It also presents the theoretical framework that will be used as the basis for performing the analysis. In the
third section, Methodology, the choice of study objects is described and justified, as is how the study has been performed. This section also includes a brief description of the chosen company, GEHC Uppsala, the interviews and respondents. In addition, the operationalization is illustrated by a chart of the theory concepts and interview questions. The purpose of the chart is to provide the reader with a brief overview of the connection between them.

The data and analysis is the subject of the fourth section. It commences with a more thorough description of the company in order to provide the reader with more information prior to continue reading the data and analysis. The findings from our interviews and the data analysis are aligned with the theoretical framework as mentioned above. This fourth section is structured into four sub-headings; the use of network knowledge, external network co-operation with, internal network co-operation, both vertically (HQ) and horizontally (other subsidiaries). The fifth and final section presents the conclusion of the study as well. Here the main conclusions of the analysis are presented according to what the theory proposes and to what extent our findings are in line with the theory. Finally, the limitations and suggestions for further research specified.

THEORY

DIFFERENT SOURCES OF INNOVATION KNOWLEDGE

As mentioned, growth-triggering innovation often occurs in the subsidiaries farthest away from HQ and closest to the customers, so called “innovation at the edges”. And it has been observed that when companies start to consider subsidiaries as extended arms instead of isolated islands the flows of innovative ideas become more effective and efficient between the periphery and the centre. Birkinshaw & Hood (2001) discuss how a new set of practices are being required from corporate executives with the aim to improve the formal and informal communications between HQ and subsidiaries, which will help foreign subsidiaries to realize their ideas. (Birkinshaw & Hood, 2001)
The acquired knowledge for innovation can be obtained from different sources. An important source for competitive advantage is the knowledge that is developed and embodied within a company, but knowledge from outside the company also contributes to success. According to Phene et al (2008) a subsidiary of a MNC can assimilate knowledge from six different sources. The first three operate within the company: the subsidiary, the MNC HQ and other subsidiaries within the MNC. The other three sources are located outside the company’s boundaries; other companies in the host country, other companies in the home country and companies in other countries. (Phene & Almeida, 2008)

The subsidiary’s innovation capability is a function of the knowledge available to it and is an important driver of subsidiary growth. The subsidiary innovation capabilities are heterogeneous where each subsidiary has developed its own distinct area of expertise, which often reflects regional advantages. Research has also been performed on subsidiaries with higher levels of R&D and human resources. Results indicate that subsidiaries with higher levels of R&D tend to grow more than those with lower levels. It is suggested that subsidiary innovation is dependent on both the ability to acquire knowledge from external sources and the capability to absorb the knowledge. (Phene & Almeida, 2008)

The subsidiaries are now assigned roles as developers of competence in their specific areas and are also responsible for sharing this competence with the other subsidiaries within the MNC. The HQs are trying to stimulate these processes with different integration systems and devices. Over time the different units will learn where certain competencies reside within the MNC and how to access these competencies. (Andersson et al, 2002)

**NETWORK THEORY**

The network model of the organization’s environment is based on observations that companies operate in environments that include a limited number of identifiable organizational actors. It also shows that the actors are continually involved in these exchange relationships. Empirical studies show that this situation is rather the rule than the exception. The network model refers to situations where the organization’s
environment is very concentrated and well structured. (Håkansson & Snehota, 1989)

The relationship with other organizations, from a network perspective, is one of the most valuable resources the organization possesses. Access to the other party’s resources, that complement the focal organization, is an important asset. These assets are claimed to be invisible, intangible and play a central part in organizational effectiveness. This is primarily because the assets are the differentiating performance factor, which provide a distinctive identity to the organization. The invisible assets are knowledge, abilities, reputation and to a large extent created in the external relationships. (Håkansson & Snehota, 1989) The network relationships between companies are explained as linked by direct and indirect business relations with for example customers, distributors and competitors. (Anderson et al, 1994)

Each relationship is composed of mutual dependence and is unique in itself. This is something only the involved parties are aware of and thereby the only way to gain the specific information from this network is to interact with the actors involved in it. (Forsgren et al, 2005) It is pointed out by Johansson et al (2002) that building relationships is time-consuming, however in the long run these relationships can be viewed as strategic assets even though it can be difficult to recognize them since they are not physically apparent. (Johansson et al, 2002).

These relationships are continuous in general and are often complex, consisting of a web of interactive relationships between individuals in different organizations. (Håkansson & Snehota, 1989) To relate the activities of several parties there is a need for adaption and established routines between all parties. The relationships allow the parties to gain access to the other’s resources. It is therefore easy for the actors to mobilize and utilize the resources of others in the network. (Håkansson & Snehota, 1989) However, it requires more than just passive adaption between the parties. When two interacting parties are confronted with problems, needs and abilities, they will develop capabilities and knowledge as a result of their mutual dependence. Therefore, it is claimed that the organization’s identity is created when interacting with its counterparts. (Håkansson & Snehota, 1989) Interdependence on other actors or entities makes it more difficult to disconnect the organization from its network as without interacting with the environment the identity is lost. Therefore the
organization is highly dependent on whom it interacts with. (Håkansson & Snehota, 1989)

A SUBSIDIARY AND ITS NETWORKS

The subsidiary has in the earlier literature been viewed as “an appendage” to the MNC. However, more recent research has adopted a view on the MNC as a network that is global but differentiated. It also aims to emphasize the subsidiaries interdependence within the MNC. This is supported through the creation and exchange of knowledge within the company. It has been suggested that MNCs are social communities that specialize in recombining and transferring knowledge. There is an underlying notion that the subsidiary is required to, in order to belong to this community, assimilate knowledge from the HQ and the other subsidiaries within the MNC. (Phene & Almeida, 2008)

In the MNC network model, the subsidiary is allowed to change position from subordinate to leading. The evolution of the subsidiary can be viewed as an organic process built around the growth or decline of the valuable resources it possesses. The owner specific advantages do not, according to the network model, have to be tied to the home country. Instead, the subsidiary often develops itself. In terms of an inter-organizational network model the MNC consists of loosely coupled entities, which gives the subsidiary the necessary freedom to develop its own unique resource profile. The network model also helps to provide a valuable perspective on the subsidiaries evolution because it reflects the fact that a lot of the subsidiaries have specialist capabilities that the rest of the MNC is dependent upon. As the stock of valuable resources in the subsidiary increases, dependence on other actors decreases. (Birkinshaw & Hood, 1998)

The concept of embeddedness has been highlighted to stress the crucial role of the relationship between businesses as a driver of organizational success. The concept has also been adopted to help analyze the subsidiary’s power base in order to gain importance within the MNC. Among business networks the subsidiary embeddedness is defined as mutual adaptation in the development of a production process and products between the subsidiary and a small amount of customers, suppliers and other
counterparts, which the subsidiary has long lasting relationships with. As mentioned above, this process of adaption with the counterparts makes the subsidiary able to develop technological and organizational competencies that can be transferred to other actors in the MNC and thereby help improve the general level of competence within the MNC. (Yamin et al, 2010)

The differences in the abilities will contribute to determine which subsidiaries in the corporate system will be givers and receivers of knowledge and as mentioned earlier much depends on the subsidiary’s relational embeddedness and the positive influence it has on theses abilities. (Andersson et al, 2002)

EXTERNAL NETWORKS – ADDING VALUE TO THE CORPORATION

The subsidiaries in MNC’s are embedded in different local networks and each subsidiary has different patterns of network linkages and is repeatedly exposed to new knowledge and ideas. This exposure has been highlighted to be one of the most basic competitive advantages of the MNC because it increases the network resources. (Andersson et al, 2002) There are two main ways that the network resources of the subsidiary can influence the MNC’s competitive ability. First it can be assumed that the access to the network resources that the subsidiaries have can be a competitive asset in its own market. Secondly the transfer of these capabilities from the subsidiary to other MNC units will help to upgrade the competence of the entire MNC. (Andersson et al, 2002)

Companies are embedded with other actors in social networks and the network can be seen as a resource in itself. This social networks help to gain access to resources and capabilities, like goods, services and innovation, which lie outside the organization. This makes the network difficult to imitate and as a result, makes the accessed resources non-substitutional. (Andersson et al, 2002) The literature claims that the differentiated network model should recognize the MNC’s environment as a network of suppliers and customers in itself. This emphasizes that the research should be directed towards understanding how the MNC’s different attributes can be explained by the external networks selected attributes. (Andersson et al, 2002)
They emphasize that such research should be directed to understanding how different attributes of the MNC can be explained by selected attributes of the external network (Andersson et al, 2002) (point at their lack of external network in data) and a special challenge for the MNC is to try harvest the benefits that resource structure brings by transferring it to different parts of the MNC. This along with creating new values that combine the resources from different subsidiaries. In terms of horizontal ties between subsidiaries the network plays an important role. (Andersson et al, 2002)

It has been suggested that the intra-organizational knowledge that is transferred between units is contributing to the different units ability to innovate. Therefore the subsidiary is expected to obtain relevant knowledge from other units and utilize it in an effective way to enhance the innovation capability. The differentiated nature of the MNC network opens up for a rich diversity of knowledge from both HQ and other subsidiaries. (Andersson et al, 2002)

The degree of a subsidiary’s embeddedness in the network is determined by the selected attributes of the external network. The degree of embeddedness within the external network impacts the development of important competencies. (Andersson et al, 2002) As a strategic resource, embeddedness refers to which extent a subsidiary’s relationship with customers and suppliers can serve as a source of learning and innovation. There is an underlying idea that actors who are tied tightly together have a greater capability to exchange information and as a result learn more from each other. (Andersson et al, 2002)

Figure 1 in the literature by Andersson et al (2002) illustrates the subsidiary’s relationships within its external network. It also shows which role the subsidiary plays in developing competence within the MNC. The subsidiary absorbs new knowledge through its relationships with individual actors and this will in turn impact the market performance.
A company can benefit from local networks and partners by knowing the host country market (with their knowledge of host country market). The network theory presented by Johansson and Mattson (1988) indicates that an important tool a foreign company has when setting up an overseas company is the local network in the new host country. This local network provides them with important assets and works as a gate-opener, since it is difficult without any connections in the new host country to gain good access. However, to what extent specialist competence in the subsidiary will be recognized by the MNC is highly dependent upon how much it makes the subsidiary stand out from the rest of the corporation and of course its ability to develop such competence. (Forsgren et al, 2000, Andersson et al, 2002)

INTERNAL NETWORKS – PARTIALLY UNEXPLORED
Subsidiaries are simultaneously embedded in external and internal networks (Forsgren et al, 2005) and there is a strong linkage between the subsidiary’s importance in innovation and production development and to the extent it is embedded in business relationship networks. Until today most of the literature has focused on the
subsidiaries relationships with the external business organizations and the impact it has made on the MNC. (Yamin et al, 2010) However, it is often pointed out that knowledge transfer within the organization flows easier than knowledge transfer between organizations. Although one of the competitive advantages the MNC possesses is the ability to transfer knowledge between subsidiaries with different business contexts that are located in different countries. (Andersson et al, 2002)

The structure of the network between subsidiaries can vary significantly, partly because of the development of the business relationships with external parties and partly because subsidiaries have a significant degree of independence and authority. The relationships between sub-units and their existing collaborative ties drive the exchange of resources. (Yamin et al, 2010) The subsidiary’s internal and external relationships are sprung from different origins. In external relationships the business often comes first and the relationship later. The opposite can be said for internal business relationships, where business transactions are often generated as a result of existing intra-corporate relationships and trust between the actors. (Yamin et al, 2010)

The external business relationships are evolved from transactions with certain customers and suppliers. Therefore adaption is one of the consequences when discovering characteristics of new partners. In the internal business relationships there already is a connection between the units due to some degree of knowledge and administrative information flows. (Gupta & Govindarajan, 1991, 2000) To some degree the potential business partners are already aware of each other because of mutual compatibility. (Yamin et al, 2010) It is reasonable to expect that internal business ties and relationships will be more tightly constrained by the corporation’s dominant logic, than the more externally embedded relationships. The latter provide more opportunities to develop business initiatives in new directions. (Andersson & Forsgren, 1996, Yamin, 2002)

One of the HQ’s formal roles is to control in addition to just being a member of the subsidiary network. What needs to be controlled is the subsidiary’s investments as well as ensuring that one subsidiary’s investments do not impact the investments of another by “crowding out” investment opportunities. (Andersson & Forsgren, 1996)
However, HQ does not necessarily have to be familiar with the external business relationships of the subsidiary and this indicates weakened control over the subsidiary. (Yamin et al, 2010) The geographical distance of inter-subsidiary relationships will be constrained since they often are cross-border. When development of business relationships require face-to-face interactions between the subsidiaries with for example operational and functional personnel, it is debated that cross-border business relationships can be of disadvantage. This strengthens the chances of subsidiaries committing to deeper adaption of external business relationships. (Yamin et al, 2010)

To sum up what we brought up in the theory section and resubmit to the model from Andersson et al (2002) and how we believe it would like for GE according to the already mentioned theory. There are different sources of knowledge and it has been observed that when companies start to consider subsidiaries as extended arms, instead of isolated islands, the flows of innovative ideas become more effective and efficient between the periphery and the centre. (Andersson et al, 2002)

Networks and the assets within them are claimed to be invisible, intangible and play a central part in organizational effectiveness. It is pointed out by Johansson et al (2002) that building relationships is time-consuming, however in the long run these relationships can be viewed as strategic assets even though it can be difficult to recognize them since they are not physically apparent. (Johansson et al, 2002)

The subsidiary often develops itself. In terms of an inter-organizational network model the MNC consists of loosely coupled entities, which gives the subsidiary the necessary freedom to develop its own unique resource profile. (Birkinshaw & Hood, 1998) Finally, compared to externally embedded subsidiaries, internal business relationships are (a) subject to greater control by the parent and more constrained by the corporate context; and (b) have a ‘narrower’ and ‘shallower’ pattern of business interactions. (Yamin et al, 2010)
METHODOLOGY

CHOICE OF METHOD

The aim of this thesis is to explore the usage of the subsidiary’s external and internal networks in the innovation development process. The study will be both exploratory, since we look at how things work to better understand the issue and explanatory, as we seek to explain relationships between variables in an organizational context. (Drogendijk, 2009; Saunders, 2009). Specifically it means we will explore the structure of the corporation to be able to explain the relationships of the subsidiary’s networks.

To accomplish this we have chosen qualitative research design, which Saunders et al (2009) suggest when combining explorative and explanatory studies. Saunders also proposes that qualitative research is suitable when “the more ambiguous and elastic
our concepts, the less possible it is to quantify our data in a meaningful way”. In addition Saunders et al (2009) also recommends holding interviews with experts in the area when conducting exploratory research. (Saunders, 2009) We believe this is suitable for our study since we required a company’s perception of its relationships with suppliers, customers and HQ.

This qualitative research design was operationalized through semi-structured interviews with personnel at GEHC in Uppsala. Saunders et al (2009) mention that the time horizon is key when developing the research design. If it is set up to be a longitudinal study the aim is to reach an understanding of an idea or a management way of thinking that probably won’t change very drastically. One should study change and development by observing people over time. (Saunders, 2009) Since relationships take time to establish and our questions are touching a more general opinion, a fairly slow changing variable, it is more of a longitudinal study than a snapshot.

Saunders et al (2009) raises the question about a study’s general applicability and the concern whether it is equally applicable in other research settings e.g. other organizations. (Saunders, 2009) Bear in mind that GE is an unusual because of its size which is why it makes the study interesting but perhaps more difficult to draw general conclusions.

According to Saunders et al (2009) a questionnaire’s reliability refers to its consistency. The reliability of the questionnaire makes the study valid. The authors claim that the design of the questions ought to be determined by the needed data. There are three ways to design questions; adopt existing questions, adapt existing questions or design new ones. In this study we chose the last of the three alternatives. In the operationalization, the questions are connected to each theory section and concepts used throughout the paper. (Saunders et al, 2009)

THE COMPANY

The reason for choosing the company is due to the appropriateness for our research question since it is large with a global footprint and many subsidiaries that make
up an extensive network. Its presence here in Uppsala means it is easily accessible, which is recommended by Saunders et al 2009. (Saunders et al, 2009) GE is a large corporation and a lot has been written, reported and stated about it. The company’s website is very extensive and we will be using certain parts as secondary reference to get a brief overview of the structure of this huge conglomerate. We are aware of that this may not be the most neutral place to find facts but what we are looking for are basic facts that should not be source dependent. The corporation consists of several different businesses in various industries, from a bank to aircraft engines to clean water, in every part of the world. From the Corporate Head Quarters in Fairfield Connecticut, to the subsidiary GE Healthcare Life Sciences in Uppsala, Sweden. This thesis focuses on GE Healthcare and the Uppsala subsidiary since it is our closest link to the whole GE corporation. (Von Heijne)
THE RESPONDENTS

To better understand GE, GE Healthcare, the Uppsala subsidiary and the structure of the corporation, an initial meeting was held with Johan Von Heijne, General Manager Research Products at GE Healthcare and out sponsor. Contact was maintained with Von Heijne throughout the study. Six additional interviews were held with individuals in different positions at GE Healthcare Uppsala. They all had one thing in common, international experience with the company, which we deemed favorable when studying the usage of the subsidiary’s networks.

The interviewees presented in chronological order:

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<tr>
<th>Name</th>
<th>Position</th>
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<tr>
<td>Johan Von Heijne</td>
<td>General Manager Research Products at GE Healthcare.</td>
</tr>
<tr>
<td>Jan Hörling</td>
<td>Head of R&amp;D Protein Analysis at GE Healthcare Sweden. Responsible for operation in Uppsala and USA</td>
</tr>
<tr>
<td>Robert Karlsson</td>
<td>Research Director at GE Healthcare Life Sciences with numerous contacts worldwide.</td>
</tr>
<tr>
<td>Helena Nilshans</td>
<td>Sr Marketing Director at GE Healthcare, colleagues and contacts globally.</td>
</tr>
<tr>
<td>Charlotta Eklöf</td>
<td>Business Leader Label Free Interaction Analysis, GE Healthcare. Responsible for personnel in Uppsala and USA.</td>
</tr>
<tr>
<td>Stefan Löfås</td>
<td>Science Director at GE Healthcare Bio-Sciences AB</td>
</tr>
<tr>
<td>Catarina Flyborg</td>
<td>General Manager BioProcess Products at GE Healthcare operating in USA, China, India, Uppsala, Österike etc.</td>
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INTERVIEWS

The seven interviews that were held were of a semi-structured nature since when conducting a combined exploratory and explanatory study semi-structured interviews are recommended. (Saunders et al, 2009) In addition semi-structured interviews are advantageous when one wishes to understand the reason for opinions and decision-making but also when one wants the opportunity to investigate the answers of the respondents. (Saunders et al, 2009) The interviews were all 30 to 40 minutes each. The structure chosen was questions that presuppose from certain themes that derive
from the theories of this study. When we interviewed people the answers were very open since we wanted the interviewees to speak freely about their feelings and perceptions of their work that could lead the discussion into new unplanned areas or new discoveries (Saunders et al, 2009). A risk when interviewing is that people could tell different stories different days, depending on several factors. For instance it could be as simple as if it is in the beginning or end of a week. (Saunders et al, 2009) We cannot guarantee that they would answer exactly the same thing everyday but it gives a picture of their overall thoughts, the corner stone. To minimize that risk and increase the validity of the study we held interviews three different days. First one at GE Boländerna, the four following at their office in Fyrislund the two last ones at GE Boländerna again.

The risk that the interviewees could appear (participant) biased and tweak their answers if for instance they believe their manager would expect them to are limited (Saunders et al, 2009) since the subject was not very sensitive and they would not gain anything from changing their story. Saunders et al raise the concern that when concluding a semi-structured research design observer error and observer bias could occur since “the more structure the less threat to reliability”. There is a risk of interpreting the interviewees’ statements incorrectly. (Saunders et al, 2009) To reduce the risk of this happening we often asked follow-up questions like: “Did you mean ....” to check if we understood the answers correctly. In addition we sent copies of our study to the interviewees to see if we got it right. To ensure that valuable information didn’t get lost in the process the interviews were recorded and immediately transcribed. The interviewees could possibly inhibit the recording which is negative and should be taken into consideration. (Saunders et al, 2009)
OPERATIONALIZATION

The operationalization targets to provide the reader with an overview of how the theory and concepts are connected to the questions asked during the interviews. The answers to the questions asked are found in the data section and are based on the theoretical framework used in this study. Below we added a chart to illustrate this connection.

<table>
<thead>
<tr>
<th>Theory</th>
<th>Concepts</th>
<th>Questions asked</th>
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</thead>
<tbody>
<tr>
<td>Sources of innovation knowledge</td>
<td>Peninsulas not islands</td>
<td>- How close is the contact between GEHQ, GEHCHQ and other subsidiaries?</td>
</tr>
<tr>
<td></td>
<td>Developers of competence</td>
<td>- Are you self-sufficient when it comes to knowledge?</td>
</tr>
<tr>
<td>Network Theory</td>
<td>Innovation at the edges</td>
<td>- How much knowledge does GE Uppsala create for the whole organization?</td>
</tr>
<tr>
<td></td>
<td>The flow of innovative ideas</td>
<td>- Can you describe the information/innovation flow between GEHQ, GEHCHQ and other subsidiaries?</td>
</tr>
<tr>
<td></td>
<td>Knowledge acquiring</td>
<td>- Do you all use the same intranet?</td>
</tr>
<tr>
<td>Subsidiary Networks</td>
<td>Exchange relationships</td>
<td>- Are there any particular regions you have more contact with than others?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If you are faced with a problem, whom do you turn to?</td>
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<td></td>
<td>Mutual dependence</td>
<td>- Do the subsidiaries use each other when help is needed rather than turning to HQ?</td>
</tr>
<tr>
<td>External Networks</td>
<td>Local networks</td>
<td>- Is your work more externally?</td>
</tr>
<tr>
<td>Internal Networks</td>
<td>Embeddedness</td>
<td>Is the contact continuous or sporadically?</td>
</tr>
</tbody>
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Table 2 Operationalization of the theoretical frame connected to the questions asked in the interviews.
DATA & ANALYSIS

General Electric

It started with a light bulb and Thomas Alva Edison during the 1880’s. The merger of Edison General Electric and Thomson-Houston Electric Company founded the company General Electric in 1892. GE Healthcare, (GEHC), provides transformational medical technologies and services that aim to shape a new age of patient care. The motto of GEHC is "healthy-magination" and it strives for better health for more people. Broad expertise in information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help the customers of GEHC to deliver better care to more people around the world at a lower cost. The broad range of products and services that GEHC provides enable the customers to more easily diagnose and treat cancer, heart disease, neurological diseases, and other conditions at an earlier stage. The vision GEHC holds for the future is to enable a new "early health" model of care focused on earlier diagnosis, pre-symptomatic disease detection and disease prevention. GEHC’s HQ is stationed in the United Kingdom and GE Healthcare is a $17 billion unit of General Electric Company. GE Healthcare employs more than 46,000 people all over the world that are committed to serving healthcare professionals and their patients in more than 100 countries. (GE’s website, 2012). To illustrate the size of the company it is worth noting that in 2010, GE committed almost $6 billion to develop innovations that help clinicians and healthcare providers deliver high-quality healthcare at lower cost to more people around the world.

GEHC Uppsala roughly accounts for 10% of the employees and turnover within the GEHC business. Part of the former medical company Pharmacia was bought by GEHC in 2004 and is now a part of the Life Sciences section. The subsidiary GEHC Uppsala works first and foremost with providing machines and chemicals to end customers, which are universities and other research groups. Within sales distributions the Swedish accounts for only 1 % of the sales and the main sales are directed to Europe and USA. (GE’s website, 2012)(Von Heijne, 2011)
THE USE OF NETWORK KNOWLEDGE

JH: Jan Hörling is Head of R&D Protein Analysis at GE Healthcare Sweden. When asked if there was any other part of the GE conglomerate that his unit in Uppsala is dependent on, Hörling explained that they are more or less self-dependent in his department. But if certain things come up that cannot be fitted into their work, they can forward it over to the counterpart business area to see if they can use it. This is coordinated through a function called strategic technologies.

HN: Helena Nilshans is a Marketing Director at GEHC Uppsala and the task of her unit is to a large extent make sure that they have competitive products to sell, that there is a continuous flow of them and that they meet the needs of their customers. The products are partly developed in Uppsala, but in many other places as well. There are production sites in Umeå, USA and Cardiff and Nilshans has a close contact with them to be able to deal with problems such as shortage of material in stock and backorders.

HN: GEHC Life Sciences has about 5000-6000 employees and is therefore quite a small part of GEHC. However, they are an important part of the company since Life Sciences is on the research flank. To quote Nilshans: “-We are very interesting to the whole company, since we are one step ahead.” Their clients are researchers who are working with products that will have their break-through in 10-20 years. Logically the researchers want to look at GE’s products and the progress of their clients since that is what brings the company forward according to Nilshans. So these initiatives do exist and they in turn help push the research forward. She tells us that this subject is on a more molecule level, whilst GE Healthcare works more with the human being and diagnostics.

JH: Hörling finds GE to be a very “hungry” company in the sense that when it finds something that looks interesting, it tends to buy it. Sometimes it is easier to buy the company than to co-operate with it. He believes that GE buys at least a couple of companies per year. Personnel from the Scientific Technology often handle those cases and give some sort of OK together with the marketing organization. Hörling described that depending on the size of the investment; it will be brought up to certain
levels in the matrix.

**HN**: Nilshans states that one of their tasks at GEHC Uppsala is to increase the growth of the subsidiary. If any acquisitions are to take place they are most involved in the acquisition decision. Usually they have to make a case as to why the company should be bought, how it will contribute to GE’s growth, how much it will cost and what return it will bring and then pass it through to corporate. They are the ones supposed to drive this type of business development and Nilshans claims they do. -“We may not win every case we bring forward, GE is quite tough and demands really high standards. But we make it happen.” She continues; “Corporate never comes to us and tells us what companies to buy, we are the ones who have to find them”. She adds that there are also a lot of companies that contact them and want to be bought.

**RK**: When the subsidiary in Uppsala first was bought by GEHC the main focus in the shift was simplification, which aimed at all the companies in GEHC being integrated into certain systems such as economy systems, development models and suchlike. That was called simplification. The greater difficulty for Karlsson however, was to adjust to no longer being a small company with close contact with every part of it. It was more an aggravation than a simplification. Therefore it takes a while to adapt to it and the bigger the company is the harder the process can get and decisions become more time consuming.

**CE**: Charlotta Eklöf has worked at GE for nine years. Until last year she was part of the Research and Development, (R&D), unit. Today she is the Business Leader for Label Free Interaction Analysis. The greatest adjustment she had to make when changing her position within GE was to form a whole new network, since the old, which was large was not of any use at all for her new day to day work. Eklöf uses her network of people when her work requires it and she contacts them frequently through e-mails and telephone meetings. She also reports much throughout the year and participates in an annual meeting when the growth and expectations are reviewed. There are scheduled meetings more often to co-ordinate the ongoing work. However, she claims, the contact between the different networks is mostly when needed and it can vary a lot.
The network theory, by Håkansson and Snehota (1989), states that business organizations are operating a lot in environments including a number of identifiable organizational actors and that these actors are involved in continuous exchange relationships. From a network perspective, the relationship with other organizations is claimed to be the most valuable resource. In the case with GE Healthcare, it seems as if their most valuable resource is the relationships that exist between the different subsidiaries within the company. The resources that are accessed through the relationships complements the focal organization’s work and that is true even for GE Healthcare. They use their networks a lot to develop new products and ideas, as Hörling described they can send over work and ideas to counterpart businesses if it seems to fit better there. However, the network theory also claims that the assets that the resources bring, which could be knowledge and information, are often created in the external relationships. This is not consistent with GE Healthcare since most of the knowledge that it uses is sprung from somewhere within the organization. That can also be a result of the many acquisitions they make, as Hörling described, where they tend to buy instead of co-operating. In that way the external network becomes the internal.

The organization’s performance and relationships help shape its identity and a mutual dependence is developed between the interacting parties. This interdependence makes it difficult to disconnect the organization and its networks, since the identity is lost without the interactive environment. This fits with GEHC to some extent, since it is daily using its internal network, which can be exemplified with when Nilshans spoke about the production sites in Umeå, Cardiff and Japan, among others. She would not be able to deliver a complete product if she did not have access to her network.

Phene and Almeida (2008) declared that recent research emphasizes that the subsidiaries are interdependent within the MNC. It is however not declared weather or not it refers to the MNC HQ or the MNC and its subsidiaries. The first case does not apply to GE Healthcare, since no one we interviewed had significant contact with GE HQ. If the latter case is true then it could be applied to GE Healthcare, since it is highly dependent on the other subsidiaries. Phene and Almeida (2008) also suggested that the subsidiary is required to; in order to sustain its position within the company, assimilate knowledge from the HQ and other subsidiaries. The argument above can
also be used here with the small difference that some information from HQ is required for the subsidiaries awareness of what is happening in the company.

Yamin et al (2010) state that among the business networks the subsidiary embeddedness can be defined as a mutual adaption in the development of a production process as well as products, customers, suppliers and other counterparts that the subsidiary has long lasting relationships with. This process enables the subsidiary to develop technological and organizational competencies that can be transferred and used not only in the particular subsidiary, but also throughout the entire MNC. This applies to GE and GEHC as well to a very high degree since almost nothing is produced or developed in the HQ. They are completely dependent on the skills that the subsidiaries possess. This helps to improve the general level of competence within GE, which the theory also states.

COOPERATION EXTERNAL NETWORKS

HN: In Nilshans unit they develop new products, improve old ones and/or make new ones that can replace the old ones. They also co-operate with some other companies that creates different parts for them. An example mentioned was the CCD-cameras that GE sells for research purposes that are created by Fujitsu and specially designed for the applications that GE’s clients require in their work. The core is the same as the CCD-cameras in Iphones. Nilshans states that there are many similar examples and if they buy a company every now and then it is usually because it complement what they already have in GE, which will increase revenue.

When asked about the use of their external network and if it is more central than their internal Nilshans describes that often it could be, but it depends on which portfolio they are working with at the time. She states; “Our position is on the marketing side of a central market organization so we must have frequent contact with the ones who actually sell our products.” She tells us that they have contact with the different regions that sell their products and that they are like subsidiaries but almost completely independent companies. The different regions purchase the products from GEHC for a transfer price, which they resell in their own region. It is crucial, according to Nilshans, for GE to have close contacts with them since it lies in the
interest of GE that their products are being sold. Nilshans unit assists these companies with developing marketing programs, campaigns and different activities to market the products.

**JH:** Hörling told us that their suppliers come from all over the world. However, most of the contacts with them are via a joint sourcing department that makes the purchases and choose the suppliers. A direct contact does therefore not exist. If they are in need of screws and bolts, to build prototypes, they turn to the sourcing department. They look for offers from different companies and buy the ones that are cheapest and best. Hörling continues that if something is very urgent he can send someone down to Uppsala to buy something, but it does not happen very often.

The sourcing department works internationally, which means that a lot of the suppliers are stationed outside the Swedish borders for example in France and Germany. If they were closer it could improve the communication and make the products more easily accessible. However it is not always the case of which ones are the cheapest and the best, Hörling states. Sourcing has to audit all the providers we use to make sure they have their finances in order, if they are environmentally certified and adhere to labor regulations. It is also important to make sure that they are not polluting the environment or using child labor. Even though it is for a good cause in the end it slows down the process significantly, which sometimes can be frustrating according to Hörling. He further describes that they co-operate with other companies on different levels, purely with universities and other research institutes, both in Sweden and internationally.

**RK:** When asked if Karlsson has any contact with their providers he answered that they have the different areas like Biacore and Microcap as part of what they are doing and it is mostly his team who are the providers of equipment but then they also have other areas where other providers are used to resell parts. Meetings are held with the distributors to inform them about the products GE is offering because they need to know the benefits with the products since they are also selling products from GE’s competitors. Karlsson believes that he has a greater contact with his external network rather than his internal one. He continues to say that their own personnel are relatively stable so the amount of people internally might be less than the amount of clients they
meet. This year Karlsson thinks the number of customer visits made are over a hundred on different locations, probably up to a thousand.

We asked Karlsson how much he believes the external network of GE Healthcare Uppsala contributes to the whole organization. Of course not an easy question to answer, but he had some ideas. He shared that they all have different business areas where their strength lies. Then there is an overlap between the areas that could provide a further contribution. He suggests that it might be a greater overlap on other levels where contacts are much closer. A statement our findings also show.

CE: We have very little contact with the external networks and no local connections outside the company here in Uppsala. Our customers are more international than local. What could be classed as external in this case are customers but because they are often classed as internal because they go through the GE site in the particular country. To sum up, very little work is external in GE. Eklöf explained that she rarely meets with the customers herself. On the few occasion she met them it could be on a conference or suchlike.

According to Andersson et al (2002) there are two main ways that the subsidiary network resources can influence the competitive ability of the MNC. Firstly, access to network resources that the subsidiary possesses can provide a competitive advantage and secondly the transfer of the resources to other parts of the MNC, increases the level of competence of the entire company. The subsidiaries within the GE network function the same way as Andersson claims. Nilshans explained that she has close contact with the different regions because it is crucial to GE that their products are being sold. According to Nilshans, It is crucial for GE to have a close contact with the different regions since it lies in the interest of GE that their products are being sold.

The embeddedness in social networks provides access to capabilities outside the organization. (Andersson et al 2002) As stated so far this does not apply to GE since they have so many resources within the company that the situation for them is reversed. Eklöf stated that the contact with external networks is poor and there are basically no local connections to other companies either. Almost everything becomes internal to GE, even the customers. Hörling explained that when they need to make a
purchase it is processed through a function called the sourcing department and they handle all of the purchases for them. This means that Hörlings department does not have any contact at all with their suppliers.

Andersson et al (2002) suggest that the intra-organizational knowledge that is transferred between units is contributing to the ability to innovate. It has been suggested that the intra-organizational knowledge that is transferred between units are contributing to the different units ability to innovate. Therefore the subsidiary is expected to obtain relevant knowledge from other units and utilize it in an effective way in order to enhance the ability to innovate. The differentiated nature of the MNC network opens up for a rich diversity of knowledge from HQ and other subsidiaries. (Andersson et al 2002) Highly relevant for GEHC Uppsala since it is a R&D site that gets input from other GEHC’s sites all over the world.

Johansson and Mattson (1988) stated that an important tool to success when setting up business in a foreign country is the knowledge of the local network. The local network is a provider of valuable information and works as a gate-opener. (Forsgren et al., 2000: 48) (Andersson et al 2002) GE needs to have knowledge about the local market in every country, but it is still not quite as dependent on it as the theory claims a company to be. GE still has its strong internal network, which can provide it with almost everything the company needs.

INTERNAL CO-OPERATION VERTICALLY, (HQ)

**HN:** Nilshans states that her unit’s contact with HQ and even HCHQ is not to frequent, due to the operative level of work. However, the HQ is constantly present and informs them about what is happening globally within GE and about the processes that are encompassing the entire company. One example of this is the HR-processes that are the same throughout GE.

**JH:** In Hörling’s department they have quite frequent contact with GEHCHQ in the sense that there is always an ongoing discussion about co-operating between the different segments and finding projects that could combines them. There are a lot of systems such as infrastructure, IT and everyone using the same intranet that ties the
company together. Further he describes that he and his unit hardly ever sees anything from GEHQ other than communicated when something has happened and even then it is usually something remote.

**RK**: In Karlsson’s department contact with the HQ is poor. He claims that GE is a big company, even GEHC is very widespread and states that GEHC Uppsala has a somewhat different profile than the rest of GEHC. Karlsson as a part of the Life Sciences unit, work a lot with supporting their regions so himself and his team have continues contact with the sale organizations in the USA, Europe, Japan and China. “So we have a wide contact network outside Uppsala”, he mentions. If a problem is encountered, Karlsson never turns to GEHC HQ for help. He feels that it is too high up. He claims that co-operation exists on a more horizontal level. The contact is mostly kept via phone, e-mail or videoconferences.

**CE**: Eklöf’s personal and what she perceives to be the general thought is that they do not experience any proximity to GEHQ or GEHC HQ. There are of course some work and problems that need to be escalated higher up in the organization, when the nature of the problem cannot be solved on lower levels. The natural choice is then to try contacting GEHC HQ, Eklöf states.

All the interviewees seem to agree that contact with GEHQ and GEHC is close to non-existent in terms of face-to-face meetings. Although they all recognize that GE is run by similar processes throughout the corporation and it appears as if there is “a GE way of doing things”. Headquarters facilitates knowledge transfer processes and information flows with different integrated systems and devices, which is in line with what the theories suggest. (Andersson et al, 2002) (Gupta, Govindarajan, 1991, 2000)(Andersson & Forsgren, 1996; Yamin, 2002) Even though geographical distance of inter-subsidiary relationships can be constrained when they are cross-border (Yamin et al 2010) it is reasonable to expect that internal business ties and relationships will be more tightly constrained by the corporation’s dominant logic. (Andersson & Forsgren, 1996; Yamin, 2002) This also seems to be the case for GE, e.g. “the safe bicycle route”. Andersson et al (2002) states that over time when different units will learn where certain competencies reside there is no need for the HQ’s recognition. This could be one of the reasons for GE as everything appears to be
up and running and therefore there is no need for guidance from HQ.

Johansson and Mattson (1988) suggests that foreign subsidiaries work as a gate-opener, to the new host country in order to gain good access. In GE’s case they do gain new parts of the company through acquisitions of the external network. But otherwise the greatest gain is probably the knowledge of the research site. Whether specialized competence in the subsidiary will be recognized by the MNC is highly dependent on how much it makes the subsidiary stand out from the rest of the corporation and of course its ability to develop such competence. Even if they do get a hold of customers the Swedish subsidiary only makes up for 1% sales within GEHC, which might not be of great interest for GE. (Forsgren et al., 2000: 48) (Andersson et al 2002)

No major exchange of knowledge seems to take place between the subsidiary and the HQ. Although information flows are facilitated and some knowledge is gained. In a way it seems to be more of a control mechanism than a knowledge transfer process.

INTERNAL CO-OPERATION HORIZONTALLY, (Subsidiaries)

HN: When speaking of other functional/sister subsidiaries Nilshans describes that a high level of interaction takes place, with the regional subsidiaries. When asked what she means by regional she explains that it could entail any part of the world. But close contact is kept with Europe, since they are in a favorable time zone as well as the USA. Nilshans explains that the two regions are both traditionally and historically big regions and stand for large part for sales. An up and coming market is Japan and it is an important market. She believes that Japan is the region they have the closest contact with right now. Moreover China is one region that is emerging because of growth potential. According GE’s calculations, China will in a few years be the company’s third or second largest region.

The contact with these regional partners is both sporadic and continuous according to Nilshans. With the USA and Europe regions they have so called forums every six weeks discussing marketing programs, follow-up to make sure that their work has impact and their plans get realized. Moreover, other meetings are held for
specific campaigns or following-up the launching of a product. Personally Nilshans doesn’t have to travel that much anymore, but her production managers travel more to keep up the contact. In addition a lot of people come to Uppsala for training and other meetings which creates closer connections. It could for instance be their region colleagues come to Uppsala to inform the Swedish subsidiary about trends in the foreign market, what the customers have expressed or all in all feedback about the improvement opportunities for their products.

Nilshans continues that they also have contact with the Indian subsidiary since they are doing some work for her unit and the contact becomes more frequent as they now have an R&D site there and are considering developing a closer relation as the Indian subsidiary grows. In addition to contact with production sites worldwide they also have contact with GE’s central research site, (GRC). If Nilshans and her unit have an idea of a product they believe can be a good in five to ten years they turn to GRC to look into it.

**JH:** Hörling shares that there are about 100 persons in India working actively with their projects and about 15 software developers and technicians that are working towards their portfolio. Hörling himself has telephone meetings every other week with the managers in India and the managers in Boländerna where they discuss the progress of the projects. Every now and then the managers from India come to visit and sometimes Hörling and parts of his unit go to India. Occasionally they hold strategy meetings over “Tele-presence” in Boländerna. Hörling explains that close cooperation is necessary between their functions. In the beginning the crew in India were only an extra resource; whenever Hörling’s unit needed extra staff that they were not able to hire people in Sweden. Now focus is put on developing the site and as it proceeds they will soon be responsible for their own products and production.

We asked Hörling where in the organization he would turn when in need of help. He told us that they do turn to the subsidiary in India, but that they are still new at their work and even though they are brilliant at it, they do not know much yet. On the other hand the Indian site does contribute with different opinions and approach angles, which could turn out to be of good value. Hörling also mentions GRC which is situated in Bangalore with several thousands employees. In the Jack Welsh Centre
they do really impressive research, on jet engines and locomotives and such, which lies outside the ordinary portfolios. According to Hörling the GRC also performs a lot of work that is assigned to it from the Uppsala office, therefore GEHC Uppsala is required to provide financing to stimulate their research. Their solutions will later be used in projects at GEHC Uppsala. Hörling implies that they are interacting quite a lot with the GRC and it facilitates them visiting each other often.

The contact between the different subsidiaries is usually on a sporadic basis, Hörling tells us. They get in touch if they need something but apart from that they also have regular scheduled meetings with the Indian subsidiary and the GRC. In addition, there is continuous reporting and emailing. The projects are often run over a long period of time so when the contact has been established with the people in the Indian subsidiary, the employees involved in the project take turns in working for each other for a few weeks. This improves the important personal contact and it is often nice to be able to put a face to the person you are e-mailing and telephoning with.

With the GEHC HQ, Hörling has the most contact through the monthly reporting procedure that every executive is required to perform. The section managers write their own reports that they send to the department managers that put them together and send them to Hörling. He revises and summarises the reports before sending them to his manager. This continues all the way up to the highest levels through the company matrix. Depending on different situations and problems contact with different parts of the organization will vary. Hörling declares that their close and frequent contact with marketing enables them to discuss queries quite openly and face to face. In the matrix there are also many support functions like Human Resources, IT, sourcing and communication departments. To diminish the confusion there is a controller on every level of the matrix and Hörling’s unit meets with one every month to go over the results and there is also HR representatives present at the directorate meetings. Hörling believes that what differentiates GE from other companies is the processes that have to be strictly followed in the same way in every unit all over the world. The organization is therefore highly process oriented. One example we encountered when leaving one of our interview sessions at GEHC Uppsala explains it perfectly. We met an employee in the lobby whom was on his way to cycle home. Not only was he riding a company bike with a company helmet and safe vest, but also he
was recommended a route to take with a map, for safety reasons.

**RK:** Karlsson keeps direct contact with sales personnel since they are sitting together with the marketing group and have regular meetings managers responsible in the region. He goes on by telling us that they are out together a lot to visit customers and train them. His unit gets to travel all over the world, but mostly in Europe and sometimes China. While they are there Karlsson and his colleagues are invited to hold customer meetings. The local part of GE will then instruct Karlsson’s unit what is appropriate to talk about with the customers so the meetings are somewhat prepared.

Karlsson tells us that they have something called field application scientists that work like him and they can support each other when needed. There is also an application forum where regular telephone conferences are held every other or every third week depending on the area. Almost everyone in this forum is invited to these conferences, but they have to be divided due the time-difference between all the different countries. But the contacts with the field application scientists are therefore regular.

**CE:** Her experience was that, after her change of position, it took time before she knew who to call for help She showed us an organization chart she drew herself over the service department and it looked more like a spider’s web than a traditional organization chart.

The regions she mostly works with are the US, Europe and Japan and she contacts the modality managers. However the contact is not too frequent and they have conferences two times a year where everyone is invited. Eklöf has only contact with parts of the Life Science units in Sweden, Cardiff, US and India. With them she has one meeting per year where expectations are detailed and strategies discussed. Growth and acquisitions are often discussed there. She is the executive for a team working in North Hamptons US, where she travels to 4-6 times a year. She works under Hörling and he makes a lot of the decisions, but if she feels that a meeting with someone abroad is necessary she can decide to go there as long as the budget allows. Often when a problem arises within a unit or market like Japan, it can be solve with the resources that are nearby. Eklöf also explained that mostly she has contact with the employees in the same position as herself in the different regions.
Like the theory earlier mentioned suggests, the competitive advantage of the MNC could lie in its subsidiaries and their networks. But contrary to most of the literature, which has focused on the importance of subsidiaries relationships with the external business relations, (Yamin et al 2010) for GE’s the internal network between subsidiaries seems to be of greater importance in many cases. One of the major gains the MNC has, claimed by the literature (Andersson et al 2002), is the ability to transfer knowledge between subsidiaries with different business contexts that are located in different countries. It is often implied that knowledge transfer within the organization flows easier that knowledge transfer between organizations. (Andersson et al 2002) Seem to be the reality for GE since a lot of collaboration is taking place in the company, over boarders. Even under the same roof every unit seems to have colleagues in different parts of the world. Depending on what day you visit the subsidiary in Uppsala you will find that they use different parts of the network. A huge dynamic network is great asset but can be frustrating at times according to some of the interviewees. There is no obvious plan for whom to contact at what time

Yamin et al 2010 state that the relationship between sub-units and existing collaborative ties prove to be the drivers of the process for exchanging resources (Yamin et al 2010) and it sums up the GE way of working quite well. There is no issue with trust at the point Yamin et al 2010 makes. Most of the interviewees mentioned that when they meet people from other subsidiaries they feel like they meet on a GE level despite all the possible cultural clashes that could occur (Yamin et al 2010).
To summarize the findings of our paper, we believe that a revised network model is required. Above is what we believe it should look like for GE. The previous theory model suggests that the internal network will consist of a few subsidiaries as players within the internal network. Instead GE’s internal network is much more extensive. Different divisions within this subsidiary have sporadic or continuous contact with subsidiaries in various parts of the world. There is no a clear picture of what it looks like or what path the communication follows, it seems to be based on needs of a particular time and project. It might look confusing with the many subsidiaries in the revised model, but it seem to be the way it is perceived by the employees. Jan Hörling compared it to an enormous ball of twine where great resources are to be found, the only problem is to find what you are looking for. Parts of the internal network can also be found on the home market due to the acquisition of former suppliers. An actor that was a part of the subsidiary’s external, local, network suddenly is included in its’ internal network. The external, local network does exist but not really to the extent that the literature implies. In addition most of GEHC Uppsala customers are to be found abroad, only 1% of sales in Sweden so most of the external network when it customers are not any closer than the internal, abroad network. When studying the
organization and getting a feeling for the size it is not difficult to understand why, according to all our interviewees, decisions take a long time to process since there are so many steps to go through.

CONCLUSIVE DISCUSSION

Our findings do not support the proposition that major focus should be put on the subsidiary’s external network. Our result, when studying GE, rather suggests that the internal network is more important and emphasis has and should be put on it. We found the reason for that to be the size and extensiveness of the internal network that comes with a large MNC like GE. The subsidiary seems to find and access most of the knowledge needed within the corporation, which can be the reason to why the external network do not seem to play as big part for the corporation as the theory implies. When great resources are to be found within the corporation, reaching outside, to the external networks, to gain knowledge might needed as much. In addition, we realize that being the sixth largest company in the world makes a special case.

GEHC Uppsala appears to be adding value to the corporation in two ways; through the innovation development process, (by sharing and creating knowledge), and through influencing decisions of mergers and acquisitions. We chose to divide the subsidiary’s internal network into two parts. Vertical, meaning HQ, and horizontal, other subsidiaries. The involvement of sister subsidiaries appeared to add knowledge and significant value to the innovation development process, while the contact with HQ seemed nonexistent at times. GEHC Uppsala appears to be not only a subsidiary, but also an important part of the company, despite its size. It might be the term subsidiary that is confusing since it refers to something being subordinate. Instead we found HQ to be administrative most of the time and not really the mother ship anymore.

Further Research or Improvement

We are aware of that a greater amount of interviews and interviews with corporate
HQ, the subsidiary’s customers and suppliers would increase the credibility of this study, to hear both sides. But due to the short time period and extent of this study, it was not possible. The study focuses on a small part of a large company, we cannot be certain that it looks the same at every subsidiary in the corporation. However, we believe that this subsidiary is a valid indication of how the GE is structured since similar processes are found throughout the corporation.

According to our findings, valuable knowledge and other assets are found in sister subsidiaries. Therefore the managerial implications could be to facilitate these resources by making it easy to communicate and exchange knowledge, both cross-border and cross-functionally, within the MNC. As for academic implications and further research we suggest that a more wide-ranging study within the area is done to explore the importance of a subsidiary’s internal network. If the results support the findings in our study it could be worth doing more research on subsidiaries internal networks to not miss out on important knowledge and other resources existing in the MNC.
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LITERATURE:


**APPENDICES**

**Introduction**
Please describe your background, your experience and your areas of responsibility.

**Sources of Innovation Knowledge**
How close is the contact between GE HQ, GE Healthcare HQ and other subsidiaries?
Are you, to some extent, self-sufficient in the fulfillment of your own knowledge needs?

**Network Theory**
How much valuable knowledge does GE Healthcare Uppsala create for the whole organization?
Could you describe the innovation flow between GE HQ, GE Healthcare HQ and other subsidiaries?
Do you have much usage of your networks?
How does this flow affect the daily work?
Do you all have the same intranet to facilitate the contact?
What personal interactions take place across the borders?

**Subsidiary Networks**
Are there any particular regions you have more contact with than others?
When you are faced with a problem, whom do you turn for help?
Do the subsidiaries use each other when help is needed rather than turn to the HQ?

**External networks**
Is your work more externally?

**Internal networks**
Is the contact continuous or sporadically?
How much do the work in your unit affect the rest of the organization?
How much value do you add to the rest of the organization?

*Appendix 1 The Interview Questions*