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Intellectual Capital in Volvo CE

A case study about IC components

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~ Intellectual Capital ~

" Assets currently valued as
zero on the balance sheet."
Steven M.H Wallman in
Edvinsson et al, 1997 p.3

"Knowledge that can be converted into profit"
Harrison & Sullivan, 2000 p.2

"all IC resources, or transformations of these resources, that are fully or partly controlled by the company and that contributes to the company's value creation."
Roos et al, 2006, p.9

"*Intellectual capital can be seen as a process*
of value creation in addition to an asset…
an action more than just knowledge or pure intellect"
John Kenneth Galbraith, 1969 in
Manning 2010, p.87

"*The difference between the initial capital (the book value of the firm) and what the stock market is willing to pay (the market value of the stock) is a new capital that is created. This is called the Intellectual Capital, (IC)"*
Stegmann, 1999, p.46

"Any asset is a claim to a future benefit, such as the rent from owning a commercial property. An intangible asset is – if it is successfully managed – a claim to a future benefit that does not have a physical or financial embodiment. When that claim is legally secured, as with a patent or copyright, we generally call that asset 'Intellectual Property'"
Bernhut, Stepjen interviewing Baruch Lev, p.3

"*The sum of everything and everybody in your company that gives you a competitive edge in the market place*"
Tom Stewart, CNN.money.com

"the possession of the knowledge, applied experience, organizational technology, customer relationships and professional skills that provide (...) [a company] with a competitive edge in the market"
Edvinsson and Malone,1997, p.44

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Abstract

Title	Intellectual Capital in Volvo CE – A case study about IC components
Date of seminar	Monday, June 7rd, 2010
Course	FEKP01, Master thesis in Business and Administration, 15 ECTS.
Major	Strategy
Authors	Helena Jakobsson Max Kjellström Jennie Monthelie
Tutor	Leif Edvinsson
Key Words	*Business Systems, Intellectual Capital, IC Components, IC Prototype, Knowledge, Tree of Distinction.*
Purpose	To get an understanding about which IC-components can be visualized in relation to Volvo CE's business systems and to explore the potential of those.
Method	A qualitative descriptive study based on primary data, such as seven interviews and written information supplied from Volvo. Secondary sources of information was found in the theoretical framework, from electronic data, articles and published material.
Theoretical framework	The theoretical framework consists of theories regarding IC, Knowledge and Strategy.
Empirical foundation	Volvo CE and Volvo IT have provided with empirical material, which will be presented primary in a qualified form, but also as a quantified form. Secondary material has been used regarding IC, Knowledge and Strategy.
Conclusion	Volvo CE captures a lot of knowledge in their documentation and huge amounts of data and information in their business systems. However, it might not be transferred into human or organizational knowledge. The density of the documentation structure and the complexity of the business systems do not easily enable a user, an employee, to capture the knowledge. Also the structure of the business and the processes does not always enable a user to know what they are looking for. In conclusion the IC components are strong, but there is no multiplicative effect between them.

Executive summary

The study of Volvo CE has been made as a case description with the intention to explore the IC components linked to business systems. To be able to discover the Intellectual Capital within business systems, the dimension of knowledge was also added. In accordance with the theoretical framework and interview material, 17 IC components were identified. These components were put in a template and scored by the management team at Volvo CE. The point of this weighting was to get an understanding of what components were considered important, and what components were rather considered as "nice to have". The result is presented in Figure 23 in the column "Value".

The results of the weighting were also compared to the information gathered during the interviews. From that comparison and with support from the theoretical framework, a valuation of the potential utilization was made. The column "Potential" in Figure 23 shows the authors interpretation of whether the component is used to its best potential or not. A horizontal arrow means that the components look to be well utilized in regards to its potential. An up pointing arrow indicates that there is underutilized potential within that component.

Figure 23 – A summary of the IC Potential

Capital	Component	Value	Potential	Summary
Human	Personal Ability	9	→	The potential is well taken care of.
Human	Motivation	9	→	The potential is well taken care of.
Human	Experience	8	→	The potential is well taken care of.
Human	Adjustability	5	→	The potential is well taken care of.
Human	System Skills	3	↗	If investing in the employees' system skills a lot of potential can arise.
Human	Academic Background	2	→	The potential is well taken care of.
Organizational	Knowledge Sharing	8	↗	Peer-to-peer is well utilized but not other channels.
Organizational	Processes	7	→	The potential is well taken care of.
Organizational	Internal Training	5	↗	Need formalizing.
Organizational	Culture	4	↗	Good potential utilization but a knowledge aspect would be good.
Organizational	Business Systems	2	↗	Is not utilized in a knowledge creating way, only operational.
Organizational	Documentation	1	↗	Structure and filtering can rise potential.
Relational	Customer Relationship	14	→	The potential is well taken care of.
Relational	Teamplaying	8	→	The potential is well taken care of.
Relational	Networking	7	↗	There are no formal channels for networking which could be of value.
Relational	Partners	4	↗	Business Areas could be a value driver if not seen as competition.
Relational	Internal Communicatio	4	↗	Improve, not increase. Filtering function and what is relevant to whom?

Note: The Values comes from a total weighting of 100 points done by EMG members. The arrows and comment are the authors' interpretations.

When looking at IC components it is also important to look at how the different capitals interact, if there are any transformations between them. A lot of transformations were identified and are presented in the full version of the thesis, but to summarize, there seem as if all three Capital Distinctions have good and valuable components, but the link between them is not very strong. The Human Capital does not support the Organizational and Relational Capital and vice versa. In order to get the most out of the IC potential, this link need to be strengthened, creating a multiplicative effect between them.

In regards to documented knowledge, the problem was not that it did not exist, the issue was that there was too much information, making the user drown or get lost in it, or simply don't know where to look for it. An organizational filtering function to decide what knowledge should be distributed to whom could ease the transformations between the human and the organizational capital, transforming the knowledge from the human capital to the organizational. The eased access to the correct information would help transforming it into an organizational asset, making the company own the information.

This IC investigation has been limited due to the scope and to the time frame. A full scale IC investigation, when also looking at financial components and Intellectual Capital components not related to Business Systems or Knowledge, could help Volvo CE to reveal hidden potential even further. This hidden potential, can when revealed, help Volvo CE in the innovation process and most of all, innovation creation.

1. Introduction

In this chapter the background to this thesis will be presented together with a problem discussion, purpose and disposition.

1.1 Background

1.1.1 Background to the subject

Knowledge is according to many business researchers an important, or even critical, part of a company's competitive advantage (Shehabat et al, 2009). As Edvinsson et al (1997) put it "*At the dawn of the twenty-first century, which companies* aren't *knowledge based?" (p.6).* Stegmann (2009) writes that "organizations as brains" became popular in recent decades, and that organizations can today focus on creating new knowledge, since computers can do all the routine job. Stegmann (2009) means this also heightens the necessity for companies to learn, to create new knowledge, to communicate and to make a change. With that in mind it would be of great value for any organization to be able to pin point and to reveal the knowledge in a company in order to exploit it to the fullest. If the organization has a "brain", or a corporate intellect, how can it use it the best? What opportunities can arise from trying to explore hidden values and their potential in a company?

Companies are traditionally evaluated by their book and stock value. The difference between those is usually considered to be goodwill or EVA (Economic Value Added). The Intellectual Capital concept offers an opportunity to dig deeper into what constitutes the gap between book value and stock value; *the hidden values* of a company (Stegmann, 2009). Those hidden values are not always obvious, neither in which ones exist nor how valuable they are. They are not always easy to measure and without such it can be very hard for an investor to realize the true value of a company (Sveiby, 2001). It can also be difficult for a company to understand what to focus on in terms of investments and research. Enlightenment about how IC resources drive value creation is critical for future investments and corporate growth (effas.net). The increasing significance of intangible and knowledge assets, bearing in mind the tacit nature of those, has fostered the aspiration to understand what creates competitive advantages in the strategic field (Marr, 2005). 94 percent of the leaders in America and Europe feel that understanding your Intellectual Capital and learning how to control it is very important (Roos et al, 2006; Molnar et al, 2004).

Thoughts and reflections about companies, who are using creativity in order to improve value, have been pronounced since the end of the 1960´s (Sveiby, 1995). The globalization, with its' increased flow of information, has made the corporate environment more complex and dynamic. This has changed the scope from tangible assets to intangibles (Jhunjhunwala, 2009). The empowerment of knowledge is the main source of creativity and in the last decade's companies who have been creative has shown to be very successful. An excellent example of promoting creativity was Microsoft in 1998, whose stock shares was valued 20 times as much as the book value, which means that 95 percent of their values were intangibles (Edvinsson et al, 1997). The stock value creation for Volvo can be seen in Chart 1 and is interesting since this study will be about Volvo.

Chart 1 – AB Volvo Stock value 2005 - 2010

Source: Avanza.se

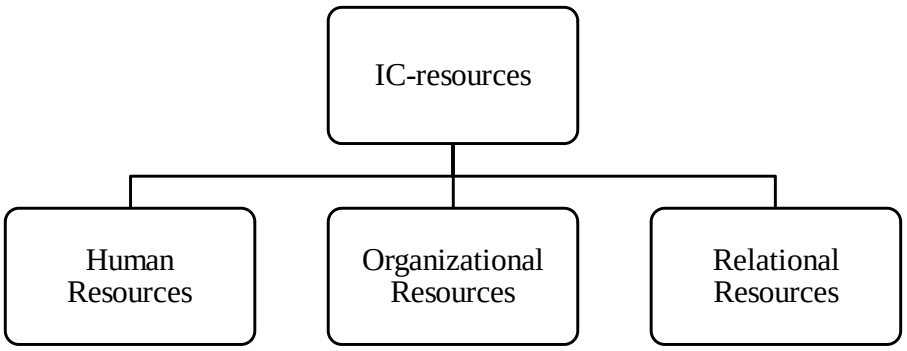
The top line in the chart represents the market value of Volvo and the lower line represents OMXSPI. OMXSPI is an index that describes the stock development at the Stockholm Stock Exchange (aktiespararna.se).

What constitutes the gap between stock value and book value? One aspect is presented by Sveiby (1995), regarding the reason for many failures when companies try to be creative. This can be due to the illusion that creativity can be controlled with traditional management methods. There have been several attempts in trying to measure Intellectual Capital in order to control and understand it. One of the major problems with traditional accounting methods is that they do not visualize intangible assets in a justified manner. The hidden values in the accounting have previously at best been shown as notes in the balance sheet.

The demand for a general distinction regarding companies' hidden values has been growing rapidly during the last two decades. An emerged classification is to call these intangibles for Intellectual Capital (IC) and Stegmann (2009) emphasize this is the most important component in stock value creation. An attempt to come up with a general distinction for IC was first made in the middle of the 1990's. This was when Sullivan, Petrash and Edvinsson gathered a group of active corporations, known for working with value transformation. They agreed upon that IC could be classified as *"Knowledge that can be converted into profit"* (Harrison & Sullivan, 2000, p.2). IC is ever-growing; in 2006, a German research group regarding Intellectual Capital, started with prototyping Intellectual Capital Statements for 350 companies. They have recently launched an extension program for an additional of 3500 corporations (akwissensbilanz.org, Edvinsson, 2010). In Denmark it is obligatory to report a company's IC, the first country in the world with that directive (juergendaum.com).

Edvinsson (scribd.com) concludes that the concept of IC is much broader than both Human Capital and intellectual property. Edvinsson et al (1997) define Intellectual Capital as Human Capital times Structural Capital. Human Capital cannot be owned by the company and includes all the qualifications of individual employees. Structural Capital on the other hand, can both be owned and traded. It contains all that is left in the building when the employees go home. Roos et al (2006) classify the concept slightly different, although based on Edvinsson's research, with a distinction of IC where there are three recognized categories that can be seen in Figure 1.

Figure 1 – Roos et als' Generic Distinction tree



Source: Roos et al (2006)

The first category is Human Resources, which include the knowledge of the employees, their innovation skills and their attitudes. The second is Organizational Resources that include all structures, processes and systems within an organization. The third is Relational Resources, including all relations with the company's stakeholders that contribute to the value creation

(Roos et al, 2006). Roos et als' (2006) classification is the one that will be used in this thesis, due to the fact that a lot of the structure will derive from Roos et als' (2006) suggestions about how to evaluate a company's IC. According to Stegmann (2009) there is also one more dimension that is important in the IC field; Innovation.

Executives normally have a good understanding of values regarding their present and past investments, but tools and measurements to capture companies' future value creation often seem insufficient (Molnar et al, 2004). According to Harrison & Sullivan (2000) there is an increasing interest among companies to find systematic ways to absorb value from intangible assets, and there are several arguments for a company to be interested in codifying and storing knowledge. When certain knowledge has not been incorporated into the company trough processes, systems or codification, the knowledge belongs to the individual who possesses it. If this knowledge on the other hand would be integrated to a corporate system, it would become an organizational asset (Brooking, 1999). Hence, it will go from being tacit to explicit. Many corporations use business systems in order to store and share information. An example of such a company is the case study object in this thesis, Volvo, where business systems are a vital part of the business as well as of the organization (O'Sullivan, 02/2010).

1.1.2 Background to the case

The Volvo Group is one of the world's leading suppliers of transport solutions for commercial use. Transportation is the main focus, but Volvo also has solutions for financing and services. Volvo's vision is "*to be valued as the world's leading supplier of commercial transport solutions*" (volvogroup.com). The Volvo Group has more than 100 000 employees and their production facilities are spread over 19 countries all over the world. Volvo's customers are spread over 180 countries, although most business is done in Europe, North America and Asia. Volvo operates with nine different brands, which are spread as follows in Figure 2 and can be seen on the next page (volvogroup.com).

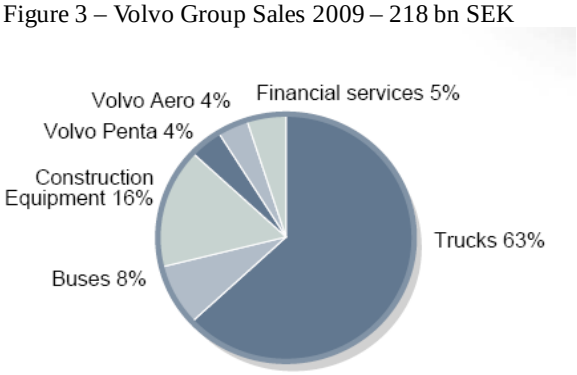
Figure 2

Source: volvogroup.com

In Figure 2 the different brands such as Volvo Trucks, Buses etcetera, represent business areas. The grey fields represent business units, which functions as synergy enhancers between the business areas (Ristner, 2010). Volvo Group operates in a total of nine different business areas; Volvo Trucks, Renault Trucks, Mack Trucks, UD Trucks, Buses, Construction Equipment, Volvo Penta, Volvo Aero and Financial Services. 2009 the total sales were 218 bn SEK. In Figure 3 the spread of the sales among the presented business areas are shown (volvogroup.com).

The second largest part of the Volvo Group, counted in sales figures, is Volvo Construction Equipment (Volvo CE), which will be the focus in this study. They are among the leaders of their industry and operate in more than 125 countries with 14 000 employees (volvogroup.com, Persson, 02/2010).

Figure 3 – Volvo Group Sales 2009 – 218 bn SEK



Source: volvogroup.com

Volvo CE is undergoing huge changes in its strategy. They have a long history of acquisitions, which can be noticed in their business systems. The business systems that are in use in the acquired companies are not always compatible with the systems within Volvo, and can take a long time to change and adapt to Volvo CE. Volvo CE's current wish is to homogenize processes and systems in a simplified manner throughout the globe. The purpose

of doing so is to cut costs, improve the transparency and efficiency as well as encourage cooperation (Persson, 2010).

Harry Winstanley, Vice President for Processes and Systems for Volvo CE Europe, recommended setting a geographical limit to the scope. Region Europe is a good example to look at and also where access to interviewees has been granted and therefore becomes a natural delimitation.

Approximately ninety percent of the systems in Volvo CE are supplied from Volvo IT (Ristner, 2010). It will broaden the perspective of the thesis to have a reflective interview with a business unit. Hence, Volvo IT is therefore taken in as a reflection influence when looking at Volvo CE.

1.2 Problem discussion

Volvo CE has, just like the rest of the construction industry, been heavily affected by the financial crisis (Dumail, 02/2010). That has affected a lot of things within the business regarding strategy, organizational structure and processes within the company. In the corporate magazine Volvo CE News, it is written that computer systems and technique is what constitutes the red line, which hold companies together (O'Sullivan, 02/2010). The same article claims that the business systems within Volvo CE were so complicated and complex that they threatened to strangle the entire company.

The common view among managers is that knowledge is important for businesses (Molnar et al, 2004). Also, a lot of researchers emphasize the importance of having a clear strategy for a business (Porter, 2008; Collis et al, 2005). Volvo, just as any organization, is likely to have a lot of knowledge within the company. The question is whether they are exploiting it to its' full potential. Is the knowledge in tune with the strategy of the company? Are there hidden values that can be revealed by looking into the components of the Intellectual Capital?

Investigating the hidden values of a company can be quite complicated and most of all time consuming. The investigator needs to have a good understanding of the company, but still remain objective (incas-europe.org). An interesting aspect is how the knowledge can be tied into the organization rather than stuck in the individual employee's heads. One way of

looking into this, is exploring whether the company's business systems capture knowledge rather than just information and data. It would be interesting to reveal the potential of a company's hidden values with a starting point from business systems. Creating a full scale IC Prototype, covering all parts of a company's values, is a much time consuming job. Hence, the focus in this thesis will be narrowed down to a scope that is manageable during a ten week period but hopefully still bring valuable discoveries. There are a lot of different parts of an IC Prototype to focus upon, but in this study the scope will be set to what can spring from a company's business systems. With that as a starting point, the business systems and what impact those have on the company's Intellectual Capital components will be explored; other values will not be taken into consideration. Innovation is an important part of an IC valuation and will be presented in the theory chapter. However, it will not be taken under consideration in the empirical gathering, due to time limits and the busy schedules of the interviewees.

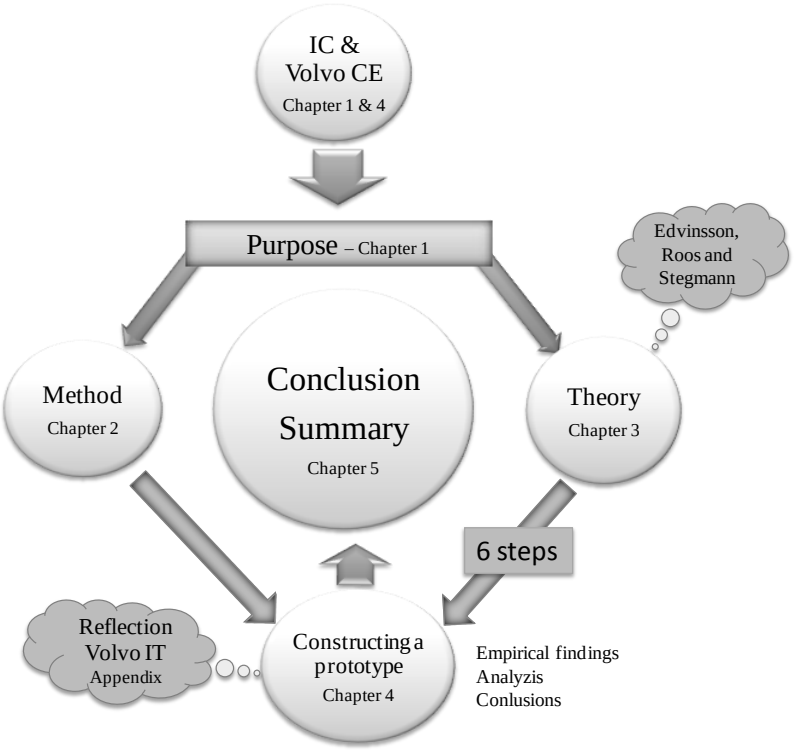
According to Stegmann (2009) it is not only important to have good IC components, they also need to be in line with the strategy. So what are the IC components in Volvo CE? Are they used to their full potential? Are they in line with the strategy? This case study will hopefully bring some light around these topics.

1.3 Purpose

To get an understanding about which IC-components can be visualized in relation to Volvo CE's business systems and to explore the potential of those.

1.4 Disposition

Figure 4 - Disposition



The disposition of this thesis looks as in Figure 4. First is a background, introducing the case object and the subject which leads to the purpose. To fulfil the purpose, a method will be constructed and appropriate theories will be studied. The theoretical framework will lead to an IC Prototype construction in chapter four. To construct the IC Prototype, both empirical material and an analytical effort will need to be combined, as well as conclusions along the line. This will result in an IC Prototype as well as a conclusive summary about the IC in Volvo CE Europe. The disposition is also described in the last section of the method chapter.

2. Methodology

This chapter aims to describe the overall conditions of this study and what methodology has been used. It will describe how the study is planned, the execution and how data will be handled and studied.

2.1 Introduction – building an IC Prototype

One target for this study is to better understand Volvo's knowledge creation through business systems by creating an IC Prototype, also called Navigator. The aim is to build an IC Prototype that visualizes the company values and also the potential of their components. An IC Prototype is according to Roos et al (2006) a visual representation of the managements' combined view on what resources are needed in the organization, how they should be used and ultimately how value is created in the organization in accordance with the strategic intention. The authors of this study found Roos et als' (2006) IC Prototype method to be a suitable tool to find Volvo CE's components' position. Since the method from Roos et al (2006) is more of the resource based view nature, there is a risk that it does not capture the resource potential. The resource based view can be seen as an input focused view and to be able to visualize the company's potential there also has to be a focus on the output (Stegmann, 2009). Due to this risk, Roos et als' (2006) IC Prototype method will be complemented with theory from Stegmann (2009) and other authors in order to add the complementary dimension "potential". The authors of this thesis will be open and flexible regarding the method if unexpected obstacles or other aspects will occur. If changes are made, from what is presented in this chapter, it will be presented ongoing in the thesis.

The IC Prototype will be built from exploring business systems and focus on what knowledge can be tied into an organization. To find the IC components position and potential the IC Prototype will be performed as a descriptive case study of Volvo CE. In the following sections the method will be described more in detail.

2.2 Case study

2.2.1 Study object Volvo CE

Volvo Group is one of Sweden's largest and most well known corporations (ekonomifakta.se). One of the authors of this study has worked at the European Region in Volvo CE as a controller, and thereby has got some insight and connections in that part of the

organization. Also, Volvo CE is a company going through big changes in the organization and now is an important time for valuations of how to keep knowledge within the company walls.

2.2.2 Collection of data

According to Bryman et al (2005) the most common case studies are focusing on one single company, and so is the case in this study. However, a reflection interview will also be performed with the largest supplier of IT systems to Volvo CE; Volvo IT. Hence, the study will be performed from Volvo CE and the findings of the empirical material and the analysis will be presented for and reflected upon by Volvo IT. There are several reasons for choosing Volvo IT. The most important motive is that it would be interesting to get reflections from a business unit that spreads over all business areas within the Volvo Group. They are likely to have a good understanding of the Volvo Group organization context, and will hopefully have the ability to relate to the value potential within Volvo CE; seen from a larger perspective. Reflections from another unit in the company will help us to reflect upon the result of this study and hence also strengthen the critique perspective.

A case study can combine quantitative and qualitative methods (Bryman et al, 2005). In this study however, the approach will be mainly qualitative, which according to Jacobson (2002) often enhances the understanding for the subject being studied. Bryman et al (2005) categorize putting numbers on data as quantitative, and the aim is to be able to quantify findings from the interviews.

2.2.3 Primary and secondary data

The channels of information are both primary and secondary data and will be gathered in three ways. The first main instrument of data collection is documentation. This includes all information that is available online, such as information from university databases like @Elin and Lovisa, and information gathered about the two Volvo companies from the web. Volvo CE has an internal corporate magazine called “Volvo CE News” and articles from different issues of this magazine will be used. Referring will also be done to recognized litterateur within our chosen framework. This type of information is, according to Arbnor et al (1994), categorized as secondary data as it is produced for other purposes than for this paper. Data collected through emails, sent to us from Volvo CE and IT representatives, will also be studied and summarized. That information will be the starting point to what the IC Prototype

can look like. The topics for the interviews will be constructed from the information gathered from the emailed data from Volvo CE and relevant theories.

The second instrument for gathering data is deep-interviews with key persons within the Volvo CE organization, with knowledge and understanding about Volvo's business systems and their functionalities. The third and final instrument will, as previously mentioned, be a reflection interview with Volvo IT. The last two instruments for data are considered as primary data, since the information has been gathered specifically for this paper and can be considered as new data (Arbnor et al, 1994).

2.2.4 Interviews

To be able to follow the structure of the chosen method, in relation to the theoretical framework, there is a need to get internal information from Volvo CE. Deep interviews with key persons in the organization and end users of the business systems will provide an insight of how Volvo CE is using their business systems to visualize knowledge within the organization.

As mentioned previously, one of the authors of this thesis has worked at Volvo CE and will therefore be the one to lead the interviews. The other two authors will have the opportunity to interject with questions and opinions when needed. The argument for the distribution is that the interviews will benefit from the understanding of the processes and systems and corporate language, such as internal abbreviations. It must not be forgotten, that there is a risk the interviewer will affect the questions that will be asked in a subjective manner, but the opportunity of getting deeper information because of a greater organizational understanding will be the priorities in this case.

Volvo CE Europe's head office is located in Duxford, England, and three of the interview subjects are stationed there. The interviews will be carried out as conference phone calls, due to the geographical factors that are restricting how they can be carried out. Skype can be seen as a better alternative since it enables the possibility of video calls. Unfortunately, Volvo CE does not have Skype possibilities, and therefore conference phones calls will be carried out. Conference phone calls also enables recording of the entire interview at the same time as notes can be taken. This will strengthen the reliability of the interview outcome, since a

comparison between the notes and the recording can be made. The interviewees will be informed of the recoding and given the choice to have the interview without it. To strengthen the reliability even further, transliteration of the recorded interviews will be done. The recording of the interviews will not be saved after the transliterations and the interviewees will be informed of this condition. Bryman et al (2005) point out several benefits of doing interviews by phone. It is both cheaper and less time consuming than face to face interviews. Further, a phone interview rules out factors such as class, age, ethnicity and other aspects that can have sublime effects and are more obvious when meeting in real life. Bryman et al (2005) also highlight what negative impact can come from phone interviews. A factor that can affect this study is that the interviewers will not be able to see the respondents, and therefore there is a risk to neglect facial expressions that might be of importance. Bryman et al (2005) also point out that phone interviews prevent visual effect, such as diagrams and photographs.

Additional three interviews will be made with Volvo employees stationed in Eslöv, Sweden. The geographical factor is not an obstacle in this case and Eslöv is also the Volvo facility where the phone conference calls will be carried out. It is therefore convenient to perform these interviews face to face. The interviewees, stationed in Eslöv, are also former colleagues to one of the authors, which could eliminate other benefits with phone calls, since they are already familiar with personal factors about the interviewer. Since they are familiar with one of the interviewers, it can also make them feel more comfortable. Being in their familiar environment in Eslöv, is another factor that heightens their level of comfort, and can hopefully make them open up during the interview (Bryman et al, 2005). A negative factor can be that the interviewees may assume that the interviewers have a high understanding for what they say, and therefore details might be left unsaid.

All interviews will be performed in an open manner; following a set of themes rather than a specific set of questions. The interviews will be done in a manner consistent with semi-structured interviews. This will allow for control of the situation and can help the interviewees to understand the questions better (Bryman et al, 2005). By using semi-structured interviews the opportunity to ask follow up questions is possible if something of special interest appears during the interview. Due to the fact that some questions that will be asked can be of a more sensitive nature, open interviews will be beneficial because of the ability to reformulate the questions. All the interviewees will be informed that sensitive information can be edited before the transliterations of the interviews. After the interviews the VP's will be emailed a

template where the most important components to have in organization are to be scored and sent back.

The reflection interview with Volvo IT will also be carried out by conference telephone due to geographical factors. The Volvo IT representative will be supplied with the same template as the VP's, but in this case before the interview. During the interview Volvo CE's results will be presented and discussed. The reason for this is that it can be interesting to see how Volvo IT values their components before taking part of Volvo CE's result. Volvo IT will also be asked to reflect upon the possible differences between the companies.

2.3 Critical dimensions

The authors, as well as the readers, should be aware of the critical dimensions that can have an impact on the result of this study. It is therefore important to reflect upon the reliability, validity and representability.

Reliability stands for how trustworthy the results from the study are, and validity of how correct they are (Bryman et al, 2005). The writers, as well as the readers, should be familiar with possible critique so the right approach will be used when reading the thesis. There is a risk that the combined theories that will be used, will be interpreted in a different way than what the original authors meant. If they were created and used in a certain context, there could be a risk when building a framework with combined theories. Another risk with this is the fact that only the relevant parts of the theories will be presented and used.

There are a lot of ways to visualize Intellectual Capital. The choice, of which method will be used, will be based on which method will be found both suitable and manageable due to the time and cost limitations. There is a clear awareness that eliminating other potential theories and measurement methods, may prevent finding the best way to capture the company values and value potentials. Hence, a method inspired and partly borrowed from different researchers within the IC field will be built and used. To minimize the risk of building the IC Prototype in a misleading way, guidelines from acknowledged IC organisations such as InCas and EFFAS will be used as complementary tools.

It should not be disregarded that the study is of a more descriptive nature, and that empirics therefore will risk being influenced of the authors' own interpretations. With the awareness of this there will be attention paid to this concern.

Regarding the representability, a recommendation will not be made to use the IC Prototype on other companies. This is because the IC Prototype will visualize a certain context, the Volvo CE Europe context. Nevertheless, the reflections from Volvo IT can open up the scope so that it can be applicable to more companies within the Volvo Group. Still, it would rather benefit as an inspiration for similar studies with the method that will be used and the enlightenment in what values can be found in corporations with the IC science.

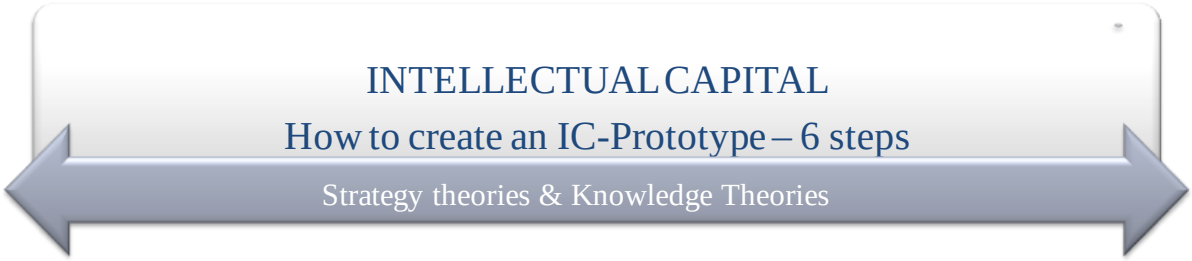
2.4 Disposition

The structure of this study will be built and inspired from the previously mentioned authors. From these authors, six steps of constructing an IC Prototype will be assembled. There will be an extensive amount of empirical findings with seven interviews and a lot of studied material. It is therefore favorable to have ongoing empiricism, analysis and also conclusion in the different steps. This enables the authors to make the most out of each step and also prevents repetition which otherwise could have been difficult to avoid. Where the context requires, some findings will still be repeated to better help the reader follow the steps. After the six steps a conclusive summary will follow.

3. Theoretical framework

In this chapter our theoretical framework will be presented. First there will be an introduction of the IC concept and then six steps will be introduced. Within the steps different theories will be presented.

Figure 5 – Theoretical framework



As described in the background, knowledge is an important key to a company's success. The IC concept is a good way of exploring and measuring that knowledge, which is why these concepts combined, will be a cornerstone of this study. The Intellectual Capital brings most value when it is in tune with the strategy and company goals (Stegmann, 2009). The frameworks chosen are therefore mainly Intellectual Capital, but also Organizational Knowledge as well as Strategy theories where they function complementary to the Intellectual Capital Theories.

3.1 Intellectual Capital - An introduction

3.1.1 IC distinctions

Edvinsson et al (1997, 2010) describe Intellectual Capital with a metaphor of a tree as in Figure 3. The above ground part of the tree, although in the picture the lower part, represents the annual reports, company brochures and organizational charts. These more or less public documents shows the company's health and how well it is doing today based on previous investments and strategic decisions. The time perspective in the

Figure 6

Source: unic.net

leaves and fruits represents the past and the trunk represents the present. As an observer you can only see the visible parts of the tree, i.e. what the situation looks like right now. Looking at Figure 3 above makes it obvious that the roots, a big part of the tree, are hidden under ground; not clearly visible for an observer. It is therefore hard for an investor to determine, based on the current health of the tree, whether the tree will be healthy in the future. What decides the future state of the tree is how well the roots gathers nutrition in the soil and how this relates to the tree. It is there, deep in the soil, where the innovation takes place. It is the relation between the roots, the trunk and the leaves that represents a company's future success or failure. The underground, or hidden, factors are the *Human Capital (HC)* and the *Structural Capital (SC)* that when combined, a show a company's Intellectual Capital (Edvinsson et al, 1997). As mentioned in the background chapter, Edvinsson et al (1997) classify Intellectual Capital as Human Capital times Structural Capital.

> *"The combined knowledge, skill, innovativeness, and ability of company's individual employees to meet the task at hand. It also includes the company's values, culture and philosophy. Human Capital cannot be owned by the company."*
>
> Edvinsson et al, 1997, p11.

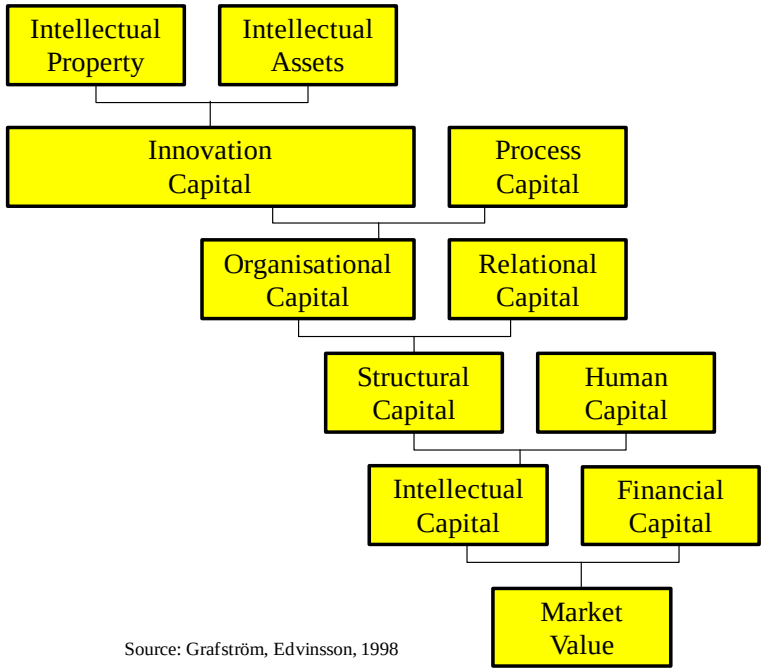
Further they classify Structural Capital as;

> *"The hardware, software, databases, organizational structure, patents, trademarks, and everything else of organizational capability that supports those employees' productivity – in a word, everything left at the office when the employees go home. Structural Capital also includes Customer Capital,, the relationships developed with key customers. Unlike Human Capital, Structural Capital can be owned and thereby traded."*
>
> Edvinsson et al, 1997, p11.

Edvinsson et al (scribd.com) add to this distinction that these assets seldom appear in the balance sheet. In relation to this, Edvinsson et al (1998) talk about a multiplicative effect, a leveraging effect that is found in the interaction between the Human Capital and the Structural Capital. It can also be expressed as HC x SC, where the Human Capital comes and leaves the company every day whereas Structural Capital works 24 hours a day. This is a reason for converting individual competence to Structural Capital and to facilitate work methods, which support the transformation.

To further look into the concept of Intellectual Capital Figure 7 represents an IC Value Scheme. In the figure below is presented how the different parts of an organization relate to IC and the how the value flows.

Figure 7 - IC Value Scheme



Source: Grafström, Edvinsson, 1998

In addition to the Human Capital and Structural Capital that is defined in the previous chapter, the Value Scheme also split the Structural Capital into Relational Capital and Organizational Capital. The Relational Capital includes all the relations that a company has with its' stakeholders, such as customers, governmental authorities, alliances and suppliers (Edvinsson et al, 1997; Roos et al 2006; incas-europe.org).

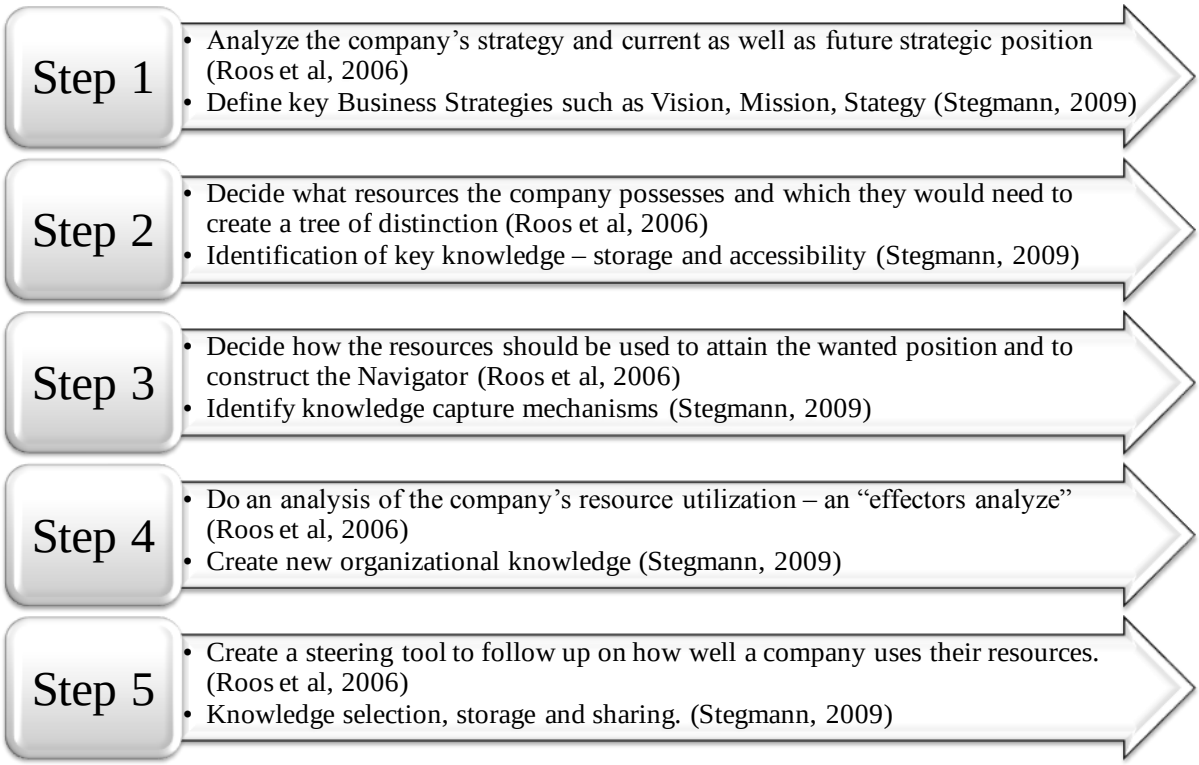
Stegmann (2009) refers to Edvinsson when stating that investments in IC*" follow the law of increasing returns while the physical investments follow the law of decreasing returns*" (Stegmann, 2009, p.58). He claims investments in IC has negligible amount of variable costs in comparison to physical assets that increase the amount of variable costs in every new sales. Therefore, he writes it is more valuable to invest in IC because new sales often do not require any considerable investments. Because of the lack of variable costs there will be economics of scale. Stegmann (2009) mentions investments in development of software as an example, where each new sale has a negligible cost. He further explains that Edvinsson's view explains why companies that require physical capital, instead of investing in IC, often have low stock of value creation. By investing in IC a company allows increasing returns and a consequence of this is that the Innovation Capital in the company improves. According to Stegmann (2009)

IC is the key source of capital that allows a company to grow by innovation. The Innovation Capital is related to products, value chains, acquisitions and alliances. Edvinsson (2002) expresses the intellectual property as part of Innovation Capital, which gives renewal strengths. Examples of intellectual property, and hence drivers of innovation, are protected commercial rights and business secrets. Innovation will be further investigated later on in this chapter.

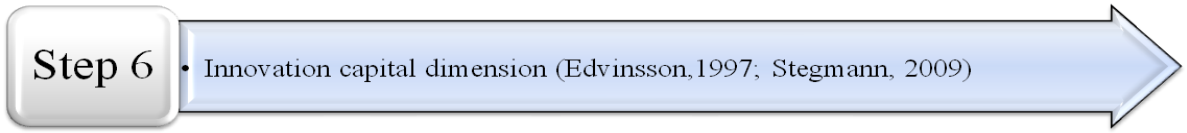
3.1.2 The IC-process and constructing an IC Prototype

Roos et al (2006) introduce five steps to get an overview of the IC-process. The focus on these steps is the position of the resources and the valuation of the same. To create a prototype which can help Volvo CE in the use of their resource potential, additional theories from Stegmann and other authors will be added to the steps. The theories complement each other in several ways and the parts which will be used can be overviewed in Figure 8. These steps can be altered in chapter four, to better fit together with the empirical material found.

Figure 8 - Exploring the IC-potential in Volvo CE by combining Edvinsson, Roos et al and Stegmann

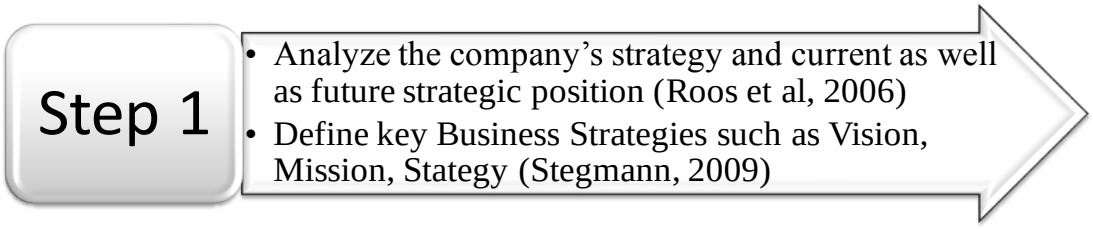


An additional sixth step was also added to broaden the view into also looking at the innovation possabilities in Volvo CE.



Now the steps will be investigated one on one, starting with the first.

3.2 Step 1



The first step from Roos et al (2006) is to *analyze the company's strategy and current as well as future strategic position.* In this step the company's strategic intention need to be defined as well as what value should be created in the business. A company's right to exist should be explained in this step according to Roos. Stegmann (2009) emphasizes that the mission and the vision of a company must be compatible with the organizational knowledge; this is a way of creating organizational commitment. He stresses that it is not enough to simply have a mission and a vision in theory; they need to come alive in the organization through the culture, the employees and the objectives of the firm. When looking at knowledge management in a company Stegmann (2009) suggests defining the key business strategies by looking at a company's mission, vision and strategies in order to see what knowledge must be managed to create stock value. Roos et al (2006) emphasize that not having a clear idea of the company's strategic intention can mislead and confuse the entire outcome of the IC process.

3.2.1 IC in relation to Strategy, Mission and Vision

The first step in Roos et al (2006) is to look at a company's strategy. According to Porter (2008), strategy is more important now than ever due to the open competition and the persistent change in the market place. A strategy aims to visualize the way to a specific position and companies must strive to create competitive advantages better than their competitors (Roos et al, 2006). The resource based view within the strategy field explains that competitive advantages lie in the way resources are allocated. In order to be a driver for competitive advantages the resources should fulfil the following criteria; they should be valuable for the company, rare on the market, hard to imitate and hard to substitute. The rarer

a resource is, the higher value it has for the company due to the high profit potential when the demand is higher than the supply. Intellectual Capital resources such as certain skills, patents or networks, are typical examples of resources that are rare, hard to imitate and to substitute. Roos et al (2006) further means that Intellectual Capital resources could be seen as an important source to competitive advantages and hence there is a clear argument for companies to find systematic ways in capturing and navigating their Intellectual Capital resources (Roos et al, 2006).

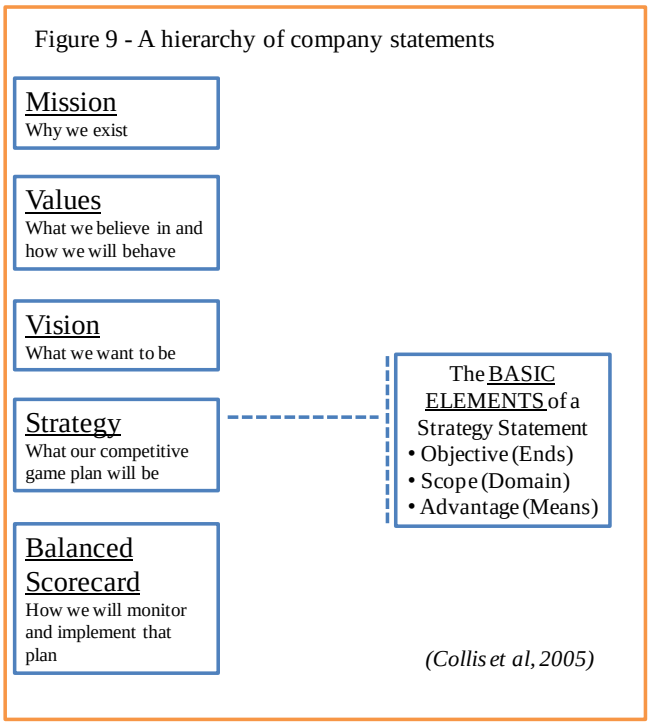
Intellectual Capital Statements for Europe, InCaS, is a collaboration project that involves leading academic institutes around Europe.

> "*InCaS aims to develop a way of being able to understand, value and represent Intellectual Capital for the benefit of companies internally but also to outside groups such as the financial community for further and better exploitation*."
> incas-europe.org

InCaS guideline (2008) implies that companies by managing intangible resources internally can benefit in becoming more efficient and competitive. InCaS (2008) suggest companies should have an Intellectual Capital statement; a document that helps managers to show how measuring intangible resources can be related to the strategy (incas-europe.org). The strategy includes corporate objectives, business processes and business success. When measuring intangible resources in business processes, companies can exploit the Intellectual Capital in those processes in a more effective manner. The IC Prototype eases strategy development and strategy implementation, where the latter according to Collis et al (2005) is a common problem within corporations. Collis et al (2005) criticises companies for not keeping their strategy simple and clear enough to enable good implementations within their organizations. Often well planned and detailed strategies look good on paper but leaders questions what happened when not reaching the planned objectives.

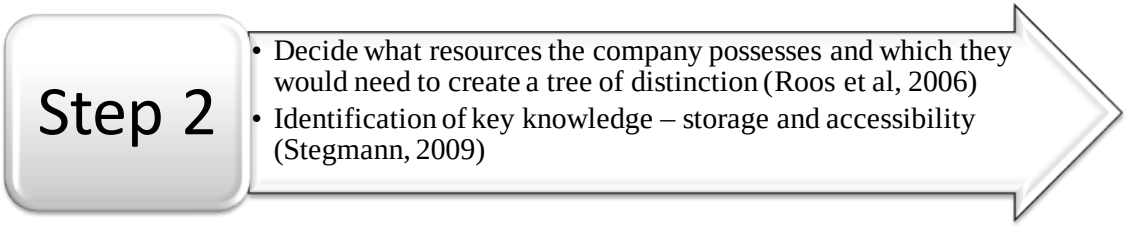
Strategies need to be formulated as concise statements so that everyone in the organization can internalise it. Collis et al (2005) therefore suggest that a strategy statement should be no longer than 35 words. To be able to work out a clear strategy statement they recommend corporations to define three critical components of a strategy statement; their objective, their scope and their advantages.

Collis et als' (2005) hierarchy of company statements is summarized in Figure 9. The strategic objective should have a clear time-table and be measurable. The challenge is to make it so specific that it shows what will drive the business in the outlined time frame. Defining the strategic scope aims to create boundaries for what managers should do and not do. Collis et al (2005) identifies the three dimensions of the strategic scope to be; customer offerings, geographic locations and vertical integration. The last critical component defines that there should be a clear definition of a company's competitive advantages. Chan et al (2005) defines value maps as diagnostic frameworks showing the current state of play in the market space. This is according to Collis et al (2005) a good way to perceive the customer value proposition. There should also be a statement of how to capture the value proposition with a unique combination of activities. Defining the critical components of a strategy statement and form no more than a 35 word long statement eases the communication of a strategy and Collis et al (2005) implies this to be essential for business success.



Collis et al (2005) as well as Stegmann (2009) highlights the importance of a company's vision and mission and of those being highly integrated in the culture and with the people of a firm. According to Stegmann (2009) visionary companies have since 1926 created almost ten times more stock value than their competition. A common parameter among good visions is that they describe an ideal and by that refers to what business a company is in. Stegmann (2009) also points out that it is important that the vision is set correctly and allows IC development; otherwise it will lead towards value destruction rather than creation of stock value. The mission should, according to Stegmann (2009) state what a company will do for its' stakeholders. Collis et al (2005) defines it as being the underlying motivation for being in business in the first place. A firm with such a mission will spawn goods that are valued by the stakeholders and thereby create market power (Stegmann, 2009).

3.3 Step 2

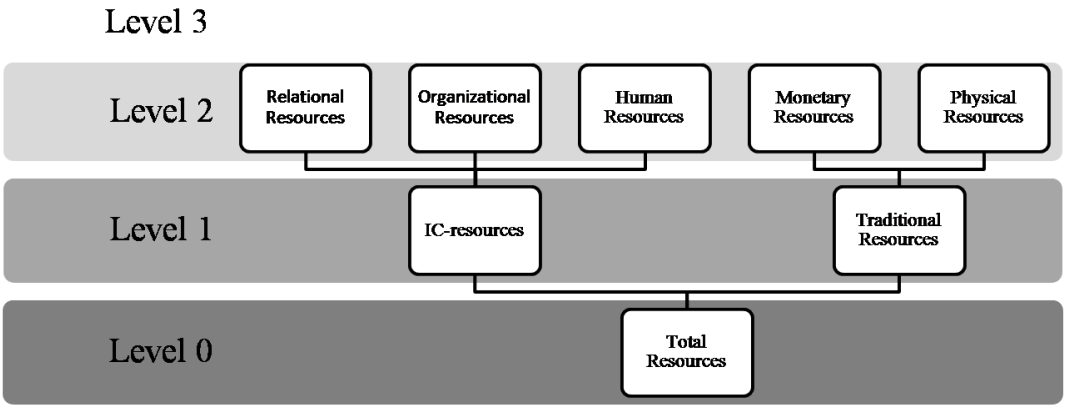


The second step is to *decide what resources the company possesses and which they would need to create a Tree of Distinction.* A Tree of Distinction is further presented below where, amongst others, internal factors should be taken into consideration when defining key resources. The resources should be evaluated in line with the company's strategy and weighted relative each other. Stegmann (2009) says to identify key knowledge within an organization in respect to two different dimensions. The first is the media in which the knowledge is stored and the second is its' accessibility. Knowledge will be further explored in the coming chapters.

3.3.1 Tree of Distinction

Roos et al (2006) present a generic Tree of Distinction with three different levels and argue that this is the best way to make a company's Intellectual Capital visible. In Figure 10 the tree has been turned upside down to better visualize the potential. All Distinction Tree models below will be presented upside down from what is presented in Roos et al (2006).

Figure 10 - Uppside down Generic Distinction Tree



Source: Roos et al (2006)

Roos et al (2006) defines the Distinction Tree as a narrowing down of a company's key resources, needed to achieve their strategic goals. This tree has been turned upside down to reveal the potential. In level two the resources are represented, in level three; IC Potential. Edvinsson (2010) talks about a fourth level, above the others, where there is IC Innovation.

The Tree of Distinction is meant to highlight what resources create value and helps to structure and organize them from an IC perspective. The three IC-resources are all divided in dimensions and possible components by Roos et al (2006) which are summarized in Figure 11.

Figure 11 - A summary of the dimensions and components within IC

Resource	Main dimensions	Possible components
Human	*Competence*	Knowledge
		Ability
	Attitude	Motivation
		Behavior
	Intelligence/ Ability to think fast	Innovation
		Imitation
		Adjustability
Organizational	*Organization*	Infrastructure
		Processes
		Culture
		Brand
		Documentation
		Software
	Substantial R&D results	New products
		New concepts
		IP
		Documented information
Relational	*Direct business relationships*	Customers
		Suppliers
		Financiers
		Partners
		Employees
	Other relationships	Owners
		Media
		Government
		Potential work force
		Groups of influence

Source: Roos et al, 2006

Human Resources are defined as the knowledge of the employees, their innovation skills and their attitude (Roos, 2006). Human Resources are in general not owned by the company. Organizational Resources are here defined in a similar way to Edvinsson et als' (1997) definition of Structural Capital; what is left in the building when the employee go home, and that is not part of the balance sheet. It is both owned and controlled by the company and need maintenance and investments (Roos et al, 2006). Relational Resources, according to Roos et

al (2006), covers all the different relations that the company have, e.g. with their customers, partners and suppliers. Whether the resources exist within the company depends on the nature of the company and in which field they operate. Human Capital is not owned by the company, Organizational Capital is and Relational Capital can be either owned by an individual or belong to the company (Roos et al, 2006).

Knowledge is of substantial relevance for today's companies and the focus on intellectual assets has increased in the litterateur (Alvesson, 2004). Shehabat et al (2009) write that treating organizational knowledge as a valuable strategic asset is popular and emphasize the importance of effectively create, locate, capture and share organizational knowledge to remain competitive. This makes knowledge management a part of businesses' overall strategy. Another description of knowledge is presented by Stegmann (2009). He describes knowledge as to be constituted by "*truths, beliefs, experiences, perspectives, concepts, expectations, procedures, methodologies, and technologies that guide people's thought, behavior, and ways of communicating*." (Stegmann, 2009, p.67) He further describes knowledge management as a way of accessing and formalizing experience, knowledge and expertise, which can benefit a company in many different ways.

Shehabat et al (2009) imply that knowledge in organizations is fragmented and difficult to locate and share. There are two dimensions of key knowledge in an organization to manage. The media dimension which refers to where knowledge is stored which is divided by Stegmann (2009) into the human mind, in an organization, in documents and in computers. The second dimension is accessibility and will be further developed below. Shehabat et al (2009) describe knowledge as data and information, where data represent observation or facts out of context. Information is data placed in a meaningful context. Their full definition is;

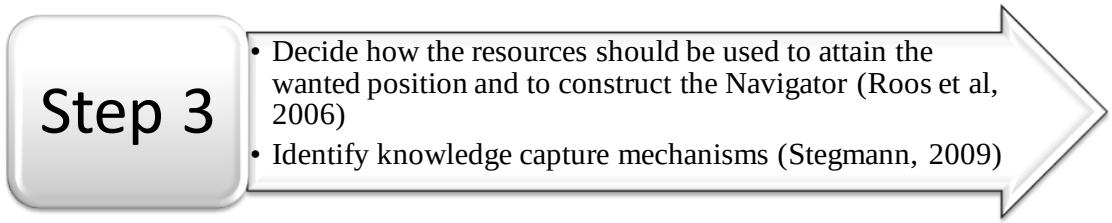
> *"Knowledge is that which we come to believe and value based on the meaningfully organized accumulation of information (messages) through experience, communication and inference".*
>
> Issa Shehabat et al, 2009, p 160

Gerami (2010) defines knowledge as intangible, dynamic, difficult to measure and claims that no organization can function without it. He writes that knowledge is found in people, processes and information and that management means thinking of knowledge as a resource. Shehabat et al (2009) as well as Gerami (2010) further separates tacit knowledge from

explicit. They define tacit knowledge as subconsciously understood and applied, difficult to articulate, personal, context specific and hard to formalize. Tacit knowledge is hard to communicate or share. Within Stegmann's dimension about accessibility, tacit knowledge is mentioned as difficult to access because it is done by observation of behavior since the knowledge lingers in the human mind and in the organization. On the contrary Stegmann (2009) mentions explicit knowledge as easy to access and well organized in terms of documents and computers.. Explicit knowledge is according to Shehabat et al (2009) easy to share and to codify. Stegmann (2009) further mentions implicit knowledge as human mind and organizational information that is accessible through questions and discussions. Shehabat et al (2009) further point out that the challenge is not only to make tacit knowledge explicit but also to realize *what* knowledge should be transferred. The balance between the two types of knowledge can be important for the competitive performance.

The creation of digital information increased thirty percent per year, making the importance of Business Intelligence grow. The amount of data available is huge. The purpose of Business intelligence is to convert data into relevant information, enabling employees to act on information rather than chasing it (youtube.com).

3.4 Step 3



The third step is to *decide how the resources should be used to attain the wanted position and to construct the Navigator*. The IC Navigator is as mentioned in the methodology chapter and is according to Roos et al (2006) a visual representation of the managements' combined view on what resources are needed in the organization, how they should be used and ultimately how value is created in the organization in accordance with the strategic intention. Also the key knowledge identified according to Stegmann's (2009) theory will be looked deeper upon in this step. The purpose of creating an IC Prototype is to capture tacit knowledge and according to Roos et al (2006), an IC Prototype should create enlightenment about resources, transformations and their relative importance. A transformation is the correlation between one

resource and another and it is important to know how much value this correlation generates (Roos et al, 2006). In this third step the transformations should be identified and mapped. Evaluating how important a resource is in the creation of other resources is done by looking at each one in relation to the others. This step can further be connected to Stegmann's (2009) advice to identify *knowledge capture mechanisms*. To do so is according to Stegmann (2009) a very critical aspect of knowledge management and concerns how an organization learns and develops new knowledge. He gives examples of three ways of learning; intelligence, experience and experimentation. Intelligence means learning by existing information such as searching in public sources or in documents, inquiries or by observation. Experience means learning by existing reality rather than from information. It can be done by reflections or experiential learning such as workshops. Stegmann's (2009) final example, experimentation, is a way of learning where neither of the other two ways of learning exists. It consists of hypothesis testing or exploratory tests. This is usually the learning mechanism when the key strategy is innovation.

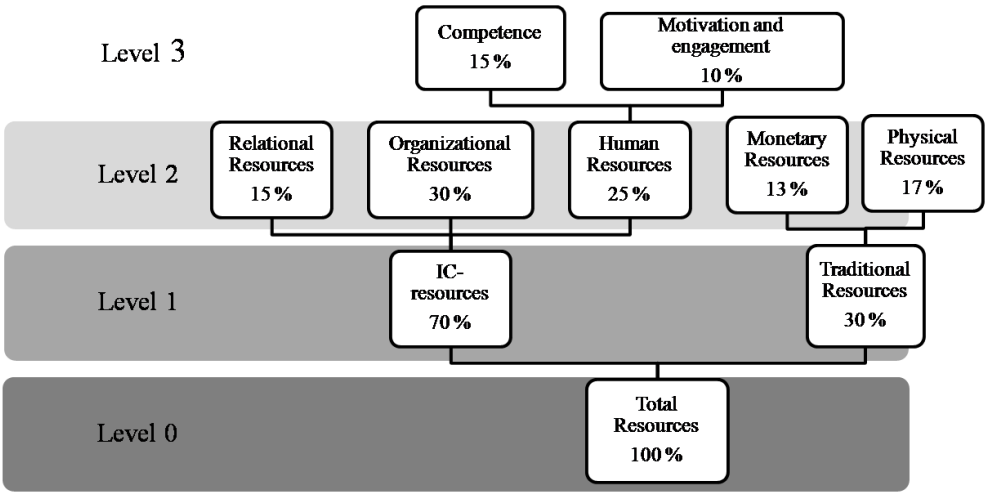
According to Roos et al (2006) the IC Prototype includes all transformations from one resource to another that is important for the creation of the strategic value creation. It should also show how one resource affects the other resources looked upon. By this the IC Prototype captures the relative meaning of a resource and its' transformations.

3.4.1 Distinction Tree - Weighting

According to Roos et al (2006), one thing when valuing companies, is to create a *Tree of Distinction.* They provide recommendations on what to look into when building a Distinction Tree, such as all kinds of corporate reports that involve resources. Roos et al (2006) point out that once the resources of a company are defined their relative meaning in the company's strategy needs to be settled. All of the resources might be considered "nice to have" but weighting them against each other is considered more controversial. This weighting can help decide which resources can be taken out and which are essential for the business. It is further important that a company evaluates their resources from both a qualitative and quantitative perspective. To perform the weighting a hundred "points" is shared between the five resource types in relevance to their importance.

The points are then shared in the below level. See figure 12 for example.

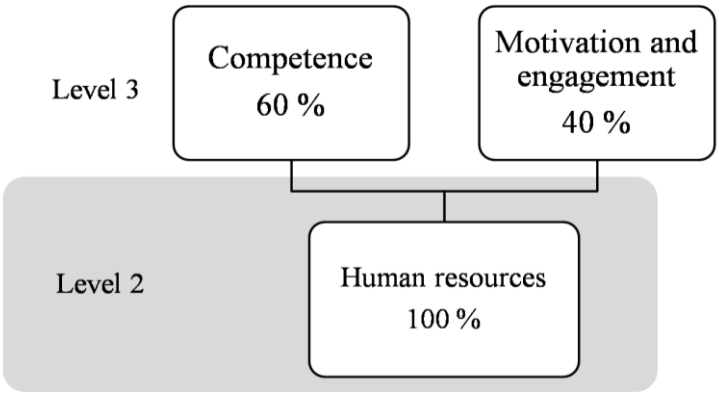
Figure 12 – Upside down Generic Distinction Tree with added weighting as example



Source: Roos et al (2006)

When looking at a specific resource a hundred points is divided within that specific resource. See Figure 13 for example.

Figure 13 - Human Resources with added weighting as example



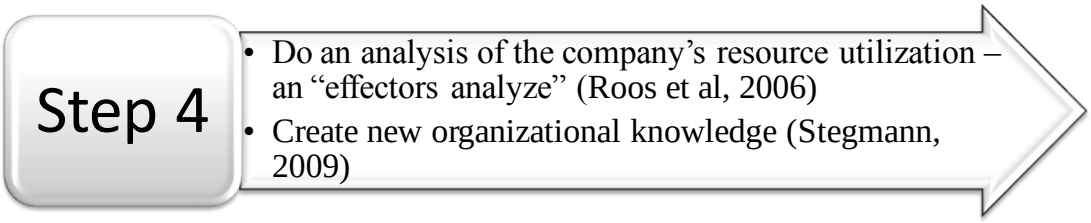
3.4.2 Building a Template

IC Potential AB, states that it is fundamental when exploring IC, to keep it simple (ic-potential.com). InCaS (2008) present several reasons for concretizing a company's Intellectual Capital. They declare that *diagnosing* this will help to realize a company's strengths and weaknesses and to function as *decision support* when valuating which opportunities will have the most favourable outcome. Further *optimization* and *innovation* spurring from the IC statement supports the implementation of actions for organizational development and the *internal communication* will hence be more transparent and thereby engage the staff. Further it helps to get an overview of strategic risk as a *monitoring* function.

Finally, the *reporting* enhances the communication to stakeholders about corporate value (incas-europe.org).

The European Federation of Financial Analysts Societies (EFFAS) was founded 1962 and is a strong association in the work towards Europe, with a more integrated financial market (effas.net). EFFAS CIC (Commission of Intellectual Capital) has summarized ten principles that are meant to reveal intangibles, in order to be able to construct a prototype for the Intellectual Capital within a company. The principles, or indicators, are meant to expose what factors are meaningful in such a prototype and can be seen in Appendix I.

3.5 Step 4

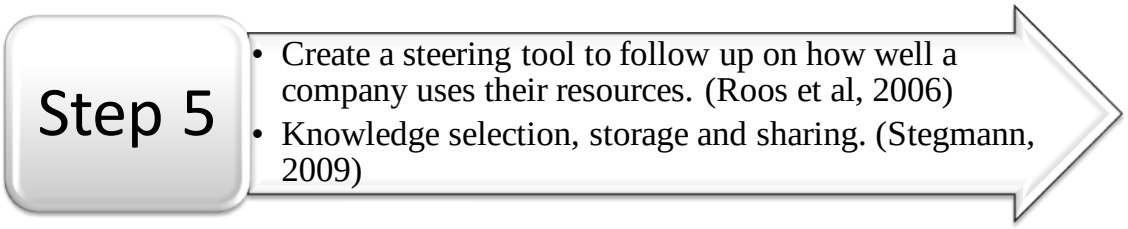


The fourth step is to *do an analysis of the company's resource utilization – an "effectors analyze".* Such an analysis assesses how efficiently used the resources are and also how robust they are. This identifies value sources and resource utilization to enhance the use of the IC Prototype. However, the aim is also to explore the potential of the components in the IC Prototype. The resource potential can be helped by Stegmann's (2009) advice to create new organizational knowledge.

An interesting aspect when looking at the business systems is whether they enable Human Capital to transfer into organizational knowledge. Stegmann (2009) writes about the value of having support systems for monitoring, infrastructure, coordination and such. He further writes about systems for capturing and obtaining knowledge, reference systems and trainings etcetera. This requires filtering how and what knowledge is stored in order to formalize, distribute, share and apply knowledge *"in order to transform it into an organizational asset*" (Stegmann, 2009, p.75). If the employees' knowledge and competencies can be transferred into the company's infrastructure, products etcetera, the know-how will be the company's property (synergator.se), which also can be compared to Edvinsson et als' (1998) multiplicative effect (HC x SC) that was earlier mentioned in this chapter. A company that is

successful in capitalizing their intellectual assets has a small difference between "what is left in the building when the employees go home" and what the employees actually achieve at work (Edvinsson et al, 1997, synergator.se).

3.6 Step 5



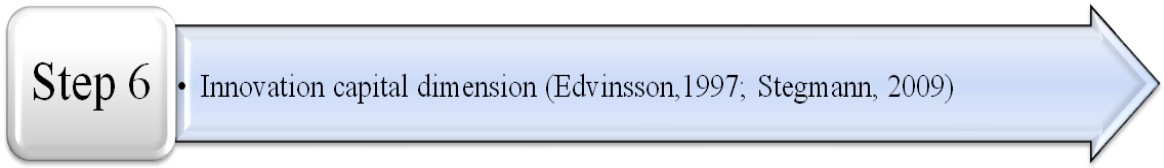
The fifth step is to *create a steering tool to follow up on how well a company uses their resources.* According to Roos et al (2006) there is an internal and an external way of doing this. The internal, which is the focus here, is a steering tool and is called an IC index, which is meant to follow up on resource positions. However, the focus is also to look at the potential and because of this the index will not be numeric; it will rather aim to show where the resources are underused or have future potential.

Stegmann (2009) further presents one more part of knowledge management – Knowledge management organizations. He highlights the value of having a "CKO" – A Chief Knowledge Officer, Centers of expertise (COE's), integrated performance support systems and Knowledge Management Project Offices. Stegmann (2009) highlights the value of knowledge use and information technology. This task refers to knowledge selection, storage and sharing. He mentions corporate culture as a critical part of knowledge management. It is of great essence that the employees feel motivated to share knowledge and are confident and comfortable to do so. Nevertheless, there must be a control of what knowledge to share and in what forum. That control, is suggested by Stegmann (2009), to be integrated in the company structure by having a COE's. Such a function in the organizational structure should be;

> "*responsible for creating, investigating, and improving knowledge; setting standards; relating with other COEs; handling people; solving problems; training and developing consultants; and providing capable staff to handle projects and processes."*
>
> Stegmann, 2009, p.76

Suggested roles in the organization are the CKO, knowledge managers, knowledge project managers and other functions that help increase the knowledge filtering and spreading.

3.7 Step 6

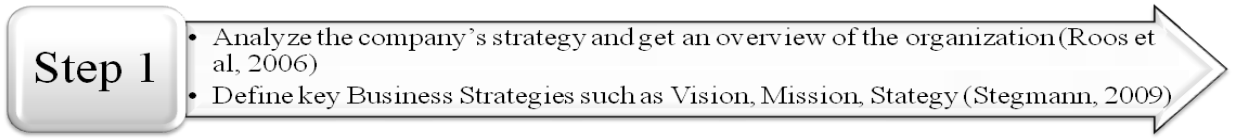


The sixth step considers the innovation dimension. Innovation is according to many researchers within business economics a key to success. Being innovative is the only way to survive in the constantly changing business climate (Prahalad et al, 2003; cisionwire.se; Johnson et al, 2008). Christensen et al (2008) writes about organizational, or managerial, risks to obstruct innovation. They write that failure when it comes to innovation is likely to come from not asking the right question; not from getting an incorrect answer. Edvinsson et al (1997) writes that understanding your Intellectual Capital is a good way of knowing how to innovate for the future. The innovation step is about taking the finding about Intellectual Capital further than just what components or capital exists. Once the Intellectual Capital is mapped and explored it must also be utilized in a good way. Intellectual Capital provides tools to heighten innovation according to Edvinsson et al (2007) and turning the future into an asset. "*Every organization – not just business – needs one core competence; innovation.*" (Peter Drucker quoted by Edvinsson et al, 1997,p.61). Edvinsson et al (1997) talk about turning the future into an asset, a so called Futurizing. To do so he stresses the importance of innovation and continuingly renewal in a company.

4. Preparing and constructing an IC Prototype

This chapter will be presented and inspired by the six steps in chapter 3. The steps are adjusted to fit the empirical material as well as the theoretical framework and can therefore differ from the steps in the theory chapter. All steps will be both empirical and analytical in variable degree. Conclusions will also be drawn along the way, especially in step 5.

4.1 Step 1



First in this step an introduction to Volvo Group will be presented, including the vision and mission. After that, a presentation of Volvo CE will follow to get a good overview of the company and its' objectives.

4.1.1 The Volvo Group

The Volvo Group has been briefly presented in the background. Here will follow a more strategy oriented description. Volvo's vision is "*to be valued as the world's leading supplier of commercial transport solutions*" (volvogroup.com). Volvo's mission consists of three parts;

- ➔ *By creating value for our customers we create value for our shareholders.*
- ➔ *We use our expertise to create transport-related hard and soft products of superior quality, safety and environmental care for demanding customers in selected segments.*
- ➔ *We work with energy, passion and respect for the individual.*

  volvogroup.com

They also have three corporate values that are mentioned in the mission and are supposed to flow all through the company; Quality, Safety and Environmental Care. The corporate culture in Volvo aims to work towards profitable growth with *energy*, *passion* and *respect for the individual.* Volvo's strategy is concisely presented as three financial objectives; profitable growth, operational excellence and product cycle management.

4.1.2. Volvo Construction Equipment

The core values in Volvo CE are the same as in the Volvo Group and are considered fundamental for Volvo CE's operations. The company covers a large amount of industry

segments, such as heavy infrastructure, buildings and road construction with a wide range of products. Volvo CE operates in most parts of the world and the growth during the past twenty years has been huge, both through acquisitions and organic growth. They have a market share of eight percent (2008), which makes them number three in size within their industry, after Caterpillar and Komatsu. During 2008 Volvo CE spent 6.2 percent of their turnover in R&D expenses and capital expenditures (volvo.com). Volvo CE has four major product lines; Wheel Loaders, Articulated Haulers, Excavators and Road & Utility (Mattsson, 2010; Altin, 2010).

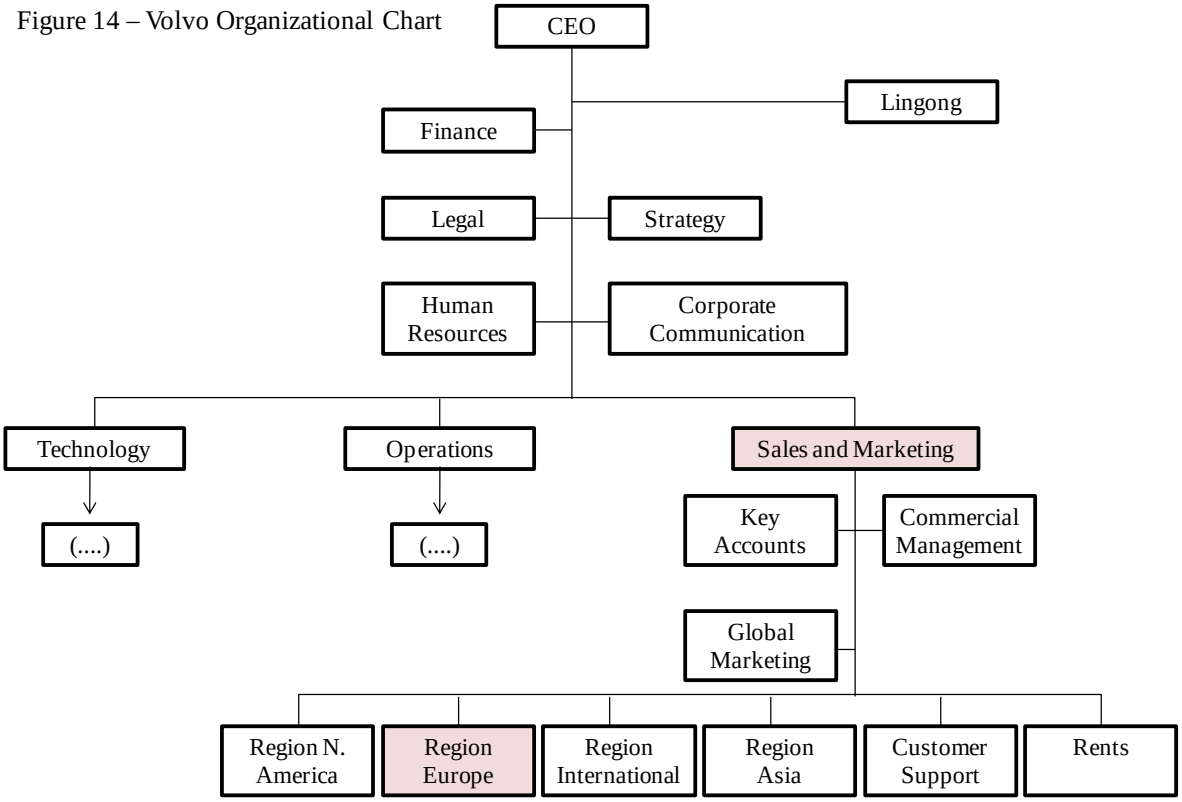
Volvo CE implemented a new strategy in the beginning of 2010. It was presented in Volvo CE News (03/2009) that Volvo CE's vision is "*To be the model of excellence & care in the construction equipment industry*" (O'Sullivan, 03/2009 p.4). The prime movers within this are 1) Achieve 98 % measured machine availability, 2) Reduce product cost by 10 % and 3) Be No 1, 2 or 3 in revenue in prioritized industrial segments. Volvo CE's wanted positions are amongst others to be the *most attractive employer* and to be *number one in customer satisfaction (*O'Sullivan, 03/2009 p.4). Another wanted position is to run the business *with common processes.* Olof Persson, President and CEO for Volvo CE, is quoted in Volvo CE News saying;

> "*This is a strategy to position ourselves for the future (…) This is not a secret strategy to be put in a shelf and forgotten. Everyone should feel something for it – good or bad – but it shouldn't leave anyone untouched. (…) The secret to making it a Great Strategy lies in its implementation. We need to stick to our commitment and execute them as promised*."
>
> O'Sullivan, 03/2009 p.5

Collis et als' (2008) notion that strategies need to be concisely formulated and no longer than 35 words is fulfilled in this strategy. The vision presented above clearly states where they want to be and the values clearly states what they believe in. It is also measurable and has a clear time limit; the goal is to have achieved the three prime movers by 2012 (O'Sullivan, 03/2009 p.4). The mission, which is the same in Volvo Group as in Volvo CE, also evidently explains why Volvo CE exists. The strategic objectives are confidential but have been looked upon and analyzed by the authors of this study, even though not published. The reader should however be aware of that they have been taken into consideration throughout the analysis. In the strategic objectives, the critical components of a strategy are fulfilled with the strategic

objectives that define their scope, their objectives and also their advantage. To conclude, it looks as if Volvo is fully in tune with Collis et als' (2008) recommendations for how a strategy should be formulated.

Figure 14 – Volvo Organizational Chart



Source: www.volvo.com

Volvo CE's organizational chart is presented in Figure 14. The scope is Sales and Marketing within Volvo CE, and within that Region Europe. Region Europe is the largest of the four regions with approximately 1700 employees, compared to the other parts of sales and marketing that have a spread between 550 and 1000 employees. The headquarters for region Europe is located in Duxford, UK (volvo.com, Volvo CE News 02/2010).

Volvo CE used to be organized in a different way, dividing for example Europe into three hubs and dividing different products into different business lines. In the old structure there was a large freedom to work with individual or regional IS/IT systems that were prioritized before the global options. The consequence was a large amount of systems becoming obsolete and not compatible with other systems within the organization, which in turn caused trouble when trying to create an overview of the business (O'Sullivan, 02/2010). According to the same article Volvo CE needs fewer and better systems that "can talk" to each other; this is an ongoing process which is stimulated by the new strategy. The systems should help to follow a

machine from the cradle to the grave in aspects involving everything from customer satisfaction to functionality of the product.

Region Europe's current organizational chart is presented below (Winstanley, 2010).

Figure 15 - Regional Organisation - Europe

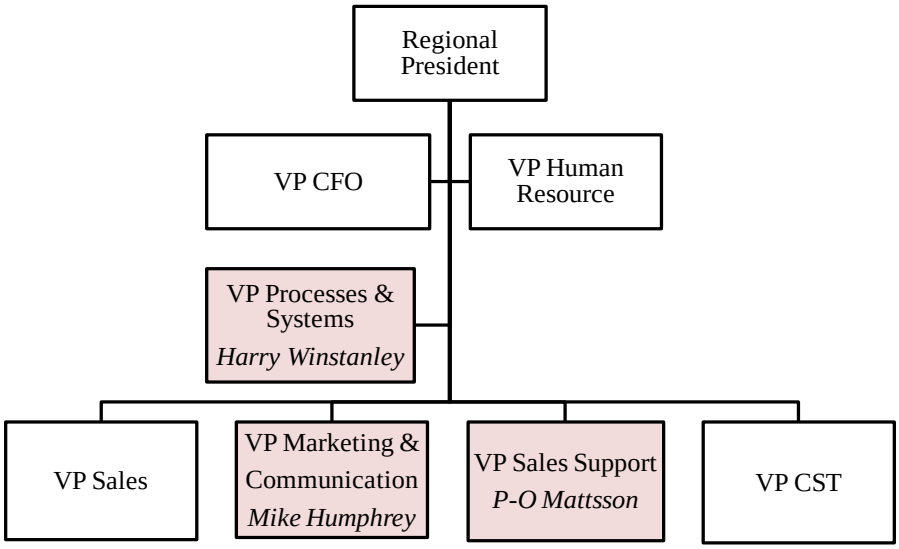


Figure 15 represents the organizational structure for European Management Group (EMG) and all the boxes highlighted pink in Figure 15 also have names in them. Those are the Vice Presidents (VP) that have been interviewed in this study and will be presented below;

Harry Winstanley is VP for Processes and Systems and has been the person to arrange all interviews with the EMG. Winstanley describes his department's main function as a support to the development of processes in new and existing areas but also to look for areas like bottlenecks and areas where the processes are ill defined. His department is further responsible for making sure the processes are compatible with the new business model within Volvo CE. Winstanley has three senior direct reports, each one divided into the different areas of his department.

Mike Humphrey is VP for Marketing and Communication. Humphrey describes his department as being responsible for the communication of marketing activities and the internal and external communication to dealers and press. Marketing and communication is split up into different areas with one manager responsible for each. There is one manager responsible for competence development of the people in the organization. Another manager is responsible for brand management, with all the material that the customers take part of.

Other managers on Humphrey's team are responsible for E-business, exhibitions and internal and external communication.

P-O Mattsson is VP for Sales Support and describes this function as a market support. They are responsible for making products ready for launch, for brochures, for price lists and also to see to that everything is ready for a customer to place an order. Mattsson has seven managers reporting directly to him within his department. The first area covers competence development in regards to products and culture. The second is business intelligence, which involves product planning, strategy and segments. The third area is market support where one person is responsible for each one of the four product lines. Finally, one person is responsible for used equipment.

Apart from the EMG members presented above, interviews have also been carried out with two product managers (PM) and one remarketing manager (RM), all parts of Mattsson's unit, although not reporting directly to him. Fredrik Larsson is Product Manager for Wheel Loaders, Per-Olof (Pekka) Grimbäck for Excavators and Anders Sjöström is remarketing manager, i.e. working with used equipment.

During all of the interviews the topic strategy was brought up. Roos et al (2006) state the strategy has to be crystal clear, in order to not mislead the IC-process. Collis et al (2008) say that a strategy needs to be formulated in a certain way so that everyone in an organization can internalize it. Stegmann (2009) writes about the importance of the vision and the mission being highly integrated in the company. All of the interviewees showed a clear awareness of this and had their strategic objectives in the back of their head in their daily work. From the interviews it also became evident that the strategic objectives had become more important due to the recession time, since it forced to make priorities in line with Volvo CE's strategy. VP Mike Humphrey puts it like this;

> *"In fact every time anything new comes up we do a sanity check whether it's supporting our objectives or not. We don't want to do anything other than those (…) For us it's from the very beginning in terms of the communication of the strategic objectives to all employees, all the way through to the follow up. It's my department who probably get it more than most. For us it is part of what we live and breathe every day"*

VP P-O Mattsson makes the following statement

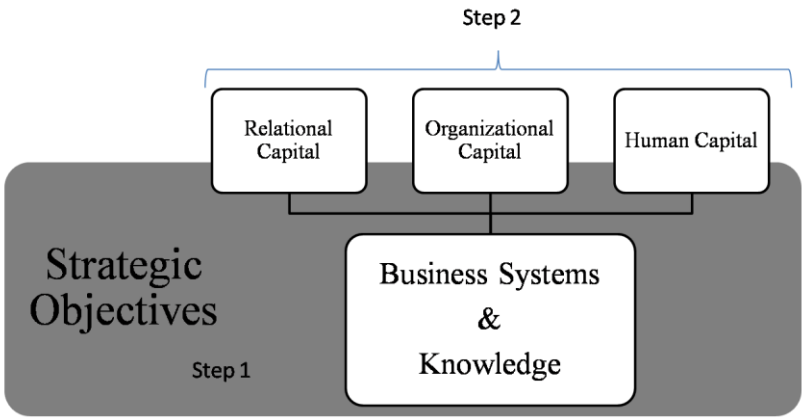
> *"It has been the strategic objective within Volvo CE and Volvo for many, many years to be number one in customer satisfaction. According to a lot of measurements and check points from different markets we also know that we on many markets are considered to be number one in customer satisfaction. That is a very important strategic objective."*

The feeling during the interviews was that the higher up in the organization the person worked, the more close to heart the strategic objectives were held, even though everyone interviewed was very aware of them and tried to work accordingly.

4.2 Step 2

Once the strategy has been reflected upon, the resources can be identified in accordance with the second step. The scope is to look at business systems so the Distinction Tree will be narrowed to what components are related to this. Along the way, when pre studying the topics and starting to perform the interviews, it became evident that another dimension was needed – knowledge. To be able to look at what knowledge is tied to business systems; obviously the dimension of knowledge was needed to be taken under consideration as well. Therefore in Figure 16 step 2 will consider Business Systems and Knowledge. Roos et al (2006) take their stand from RVB (Resource-Based View). To not be locked into that view, the perspectives have been named "Capital" instead of "Resources" in Figure 16.

Figure 16 - Capital related to Business Systems and Knowledge



Before the interviews were carried out, the dimensions and components from Figure 11 in the theory chapter were compared to the strategy and put in the scope of business systems and knowledge. Those that appeared interesting and relevant from these parameters were brought up as topics in the interviews. Those components, and also new components that became evident during the interviews, are presented below. The components are summarized in Figure 17 and then described in the coming sections. In those descriptions the knowledge identification from Stegmann (2009) has also been taken into consideration.

Figure 17 - A summary of the dimensions and components within Volvo

Resource	Main dimensions	Possible components
Human	*Competence*	Experience
		Personal Ability
		Academic Background
		System Skills
	Attitude	Adjustability
		Motivation
Organizational	*Organization*	Documentation
		Processes
		Internal Training
		Culture
		Business Systems
		Knowledge Sharing
Relational	*Direct business relationships*	Networking
		Customer relationsships
		Partners
		Internal communication
		Team playing (internally)

4.2.1 Human Capital

Human Capital was a reoccurring topic during all of the interviews. All of the VP:s stressed the fact of human abilities of different kind. The importance of Human Capital was also evident in the interviews with the managers. The indicators below were identified during the interviews to be part of the Tree of Distinction.

➔ ***Experience***

Many of the interviewees agreed that there is some knowledge that is challenging to make transparent and are not often visualized in a physical way. During the discussion with VP P-O Mattsson it became clear that knowledge can be derived from *experience*. He said; *"There is some sort of information that we basically never write down (...) you can also call that experience".* This type of knowledge is what Stegmann (2009) defines as tacit, meaning it is

subconsciously understood and applied. This knowledge is difficult to codify and share but to do so Stegmann (2009) suggests observing and discussing.

It became clear during the interviews that much of the knowledge within Volvo CE comes from people's personal experiences. Several of the interviewees highlighted the importance of having people with a lot of relevant experience on the team. One of the product managers has built up a lot of experience during his 34 years in Volvo and describes that he often feels like the "spider in the web". He expressed that he regularly gets contacted about different issues, even though he formally has nothing to do with the problem that he is asked to solve.

> *"Partly I have provided me with experience by myself (...) With experience and due to some training I can answer to some questions directly and discussions have come up during my time in Volvo, so I have learned what thing will fit the other and so on"*
>
> PM Per-Olof Grimbäck

VP Mike Humphrey stressed that it is important that people have a lot of relevant experience when hired to a certain position. He got a question whether there is a lot of training when someone is hired and answered; *"I wouldn't go so far to say a lot. I mean quite fortunately people that get hired have a good relevant experience within the field in forehand".* Some of the interviewees mentioned that it takes time before you have gained the internal experience that is essential to some positions within the organisation. One of the VP's held that when losing a talented person it often takes six months before they are back to the level that they want to be in that specific area. VP Mike Humphrey also emphasized that exchanging experience on set, when replacing employees, still is the most effective way of learning. This is an example of tacit knowledge sharing which is hard to access and according to Stegmann (2009) done by observation.

> *"...when it came to his replacement we were looking for a particular type of individual , first of all in the terms of skill set, but then he needed to spend many months side by side with the person who retired, before he actually did so, in order to transfer the knowledge from one another. No process or system would ever be able to do that in anything like a good old way, side by side. "*
>
> *VP Mike Humphrey*

One of the VP's also highlighted the importance of having a balance in the recruitment internally and externally. He said that sometimes you do need some experience from the outside to bring some fresh blood and ideas to the table. However, he also said that Volvo CE at the moment tries to recruit mainly from within the organisation. In Volvo CE News the CEO and President for Region Europe, Chris Rees, expressed that due to the recession times and the organisational restructuring; Volvo CE had to make a lot of people redundant. *"Unfortunately we had to cut 20 percent of the workforce, but we have been very careful to protect the resources and the talent we need when the demand is increasing again"* (O'Sullivan, 02/2010 p.24).

To wrap up it seems to be considered crucial both to have and to develop relevant experience within the organization. The following indicators *personal ability* and *academic background* are all in a way part of a persons' experience. Still, Personal Ability and Academic Background can also be interpreted as important parts of the Human Capital individually; they have therefore been separated from experience in this chapter as well as in the Distinction Tree.

➔ ***Personal Ability***

Many of the interviewees meant that all knowledge cannot be captured within data systems. VP Harry Winstanley said following during the interview; *"Information is just a collection of data. In order to capture the intellectual data you need a human."* One manager said that much of the knowledge is an instinctive feeling or a gut feeling, which cannot be transformed into systems. RM Anders Sjöström said *"A lot comes down to how we are as people"*, which also implies that some knowledge is tied within a personality or personal ability. When we talked about fresh intake of people, one of the VP's expressed that when for example looking for a new programmer to his team, he thinks that one of the most important things is that the person has the capability of what the job require. He pointed out that many people that work within IT have a certain analytic skill. He meant that is something that is often a given skill within the field of IT, a skill that spur the self-education when working.

Almost all of the interviewed emphasized that Personal Ability is essential, because it decides what a person is capable of in "hands on" situations.

➔ ***Academic Background***

The next identified capability to fit in the Tree of Distinction is Academic Background. All of the VP's emphasize that it is good to have an Academic Background, even though it is not mandatory in the recruitment process. VP Mike Humphrey said that an academic background *"is certainly not a show stopper"* and VP P-O Mattsson said that *"A good formal education is very important to have, but that it is a basic thing".* One of the VP's also expressed that almost everyone in his team has undertaken some kind of academic graduation. The pattern seems to be, even if it is not obligatory, that an Academic Background is a value driver.

➔ ***System Skills***

This capability was not discussed vigorously during the interviews. What came up was rather the lack of system skills or the notion that the systems are difficult to maneuver and takes time to use and to learn. Also, some of the interviewees did not see the benefit with the systems in relation to their tasks and were therefore not motivated to learn them. Nevertheless, with the scope being business systems it is an interesting component to the Tree of Distinction.

➔ ***Adjustability***

All of the interviewed VP´s thinks that Volvo CE is moving in the right direction by making major changes with their business systems. VP Mike Humphrey commented as follows in regards to the adoption;

> *"It's improving; but I think there is a considerable way to go. When you take such a fundamental change in organizational structure in such a large organization it takes a long time to really settle in, especially when it is in the middle of a recession where we had to lose a lot of talented people within in that process.*

Volvo encourages internal recruitment and to change positions within the company. This would require an adjustable person.

➔ ***Motivation***

All of the interviewees seemed to be quite passionate about their job at Volvo CE in one way or another. One interpretation of the interviews was that the intrinsic motivation seemed to be one of the driving forces. One of the managers for instance had a great passion for forest industry and started already as a 17 year old a company where he drove forest machines in Canada and Sweden. Now he is a product manager for similar products within Volvo CE. A common thing for the PM's and the RM interviewed is that they all lit up when talking about

their products; they have a genuine interest in them. The intrinsic motivation view can also be about values. One of the VP's left the company to work for a competitor some years ago but came back due to the good organisational climate in Volvo CE. This can be mirrored in the following quote;

> *"... I think that different companies attract different types of people. I think some people struggle to move from one to another because it turns out it just does not fit their own business ethics or their own personal point of view or whatever it might be."*
>
> VP Mike Humphrey

Both VP Mike Humphrey and another of the VP's further told us that Volvo actively works with creation of motivation; they work with personal development plans and they try to be an attractive company to work for.

> *"One of our objectives is to become the most attractive employer in the industry; we need to do more in terms of making that objective a reality. So that people when they look at Volvo they will say 'You know what, that is the company to work for in this industry'. To instil a sense of pride, belonging and motivation along the lines. It can be a challenge in the industry times where we are right now, coming out from the bottom of a down turn but I think that is one area that we really do need to pay more attention to. It is very easy to lose the best talent in circumstances like these and then you are left with the ones who perhaps are not ideal."*
>
> VP Mike Humphrey

One of the managers had worked within the organisation for over 30 years and has seen and experienced the company history with own eyes. He mentioned that sometimes when meeting customers he tells them how they did with a certain machine in 1988 or other historical happenings. Sometimes, when meeting customers in family businesses, he has worked with their father or grandfather, and he stated in the interview that this is something often appreciated by the customers and that he feels that it is good for his self confidence. He seemed to be motivated by the fact that customer as well as colleagues values his input.

4.2.2 Organizational Capital

The Organizational Capital can be compared to what Edvinsson et al (1997) refer to as "what is left in the building when the employees go home". In this chapter such indicators, in relation to business systems and knowledge will be presented, from what became evident during the interviews.

➔ ***Documentation***

During the interviews the topics documentation came up at several occasions. Something that was brought to the surface was the problem of individuality in regards to documenting.

> "*If you take ten people and look at the way they manage their PC, whether it is outlook email or if it's files and folders in their computer, they will have a myriad of different ways of storing information. So even finding information on somebody's laptop can be a challenge in itself. (…) To have that all in one place, easy to read through and understand, would be great to have. But that is entirely up to the individual who is currently responsible for it to have done in a good and effective way. I don't think very much attention is paid to that now and that could be one area where we could improve. (…) I think there are some challenges in finding the things you can do to improve it."*
>
> VP Mike Humphrey

This problem also seems to be reflected in a documentation and sharing tool called Teamplace in the Volvo intranet. Teamplace is a part of the internal network and functions as a webpage where information can be stored in terms of calendars, files and folders and so on. The information can be shared with the members of a specific Teamplace, and members can also be made contributors themselves; depending on the purpose of the Teamplace. However, most of the interviewees seemed to be of the opinion that there are too many Teamplaces and that they are a bit out of control. Mike Humphrey says "*there are so many different Teamplaces that you end up being still fragmented from one place to the next*". A VP points out the fact that he can never find what he is looking for on a specific Teamplace, which is likely associated to the same logic as how people store information on their PC. PM Per-Olof Grimbäck said "*It* [Teamplace] *was very popular a while ago, everybody created Teamplaces. Eventually, you couldn't find what you were looking for due to the many different Teamplaces."* On the question "What do you think about Teamplace as a way of sharing knowledge and documentation" VP Harry Winstanley answers;

> "*I think that if used correctly (…) I think it is probably adequate, it's a little bit cumbersome, it's fairly basic. The problem I find with Teamplace is that people set up Teamplaces and forget what they've done there or put information on to them and forget that they've got it in their hand and the problem we had is that the cost is associated with the storage. So there are a lot of people putting a lot of information on to Teamplaces and no one does regular cleaning or maintenance of these. That drives cost (…)*".

Hence, Teamplace does not seem to be a much appreciated tool, at least not by the persons interviewed. Another tool is cOMMon which is available to all in VCE in order to document manuals. According to a VP, cOMMon has two facets. One is the ability to document common processes down to a certain level across the board. The second thing is it gives the ability to attach an operational management manual to these processes themselves. However, it is according to the same VP not very user friendly and people often struggle with how to find their way around it, to edit it and add information to it. He describes it as a classic system mistake, where you develop a system for the person who understands it the best instead of for the user that is going to use it. This classic mistake will be taken into further consideration in the component Business systems.

➔ ***Processes***

Pascal Martinez, former Head of Processes and Systems globally, defines in Volvo CE News a process as "*a definition of a way of working, how we do our jobs. This defines the steps and the flow of activities. The systems are simply the tools we need to support these activities and share information*" (O'Sullivan, 03/2009 p.18). One VP talks about processes as something that is always present; you have a process when you get up in the morning, you have a process for basically everything you do. Although, he highlights, it is of much greater essence to be aware of the processes when you run a global business. VP Harry Winstanley puts it like this;

> "*For me processes are a very key area because if we don't get the processes right, then we've got a problem with the running of the business. For me it is absolutely critical that we continue working to develop and refine and enhance the processes that we use in our company. (…) there are certain elements where processes actually need to be defined. So that when you have new people, or existing people moving to different areas, there is a set structure that people can come into and understand how to work and how we do business."*

One VP states that the processes are already in place but they are not put down in writing. On the other hand in his department there is an ongoing project of writing them down. Still he emphasizes that some things cannot be put into a process, it can only come from experience which is more described in the previous chapter about Human Resources.

A manager is of a different opinion and stresses that Codes of Conduct is the leading star, not processes that can be different from time to time. Another manager states that it is obvious that processes are needed when you are going to build 5000 Wheel Loaders, but it is not possible to have processes for everything. He states that there are no guidelines for the daily work.

➔ ***Internal Training***

One of the VP's is responsible for competence development, which includes everything from product training to more cultural and behavior training, e.g. how people should act in negotiations.

To a question about how new employees were trained when they started working for Volvo CE P-O Mattsson answered;

> *"We try to have more training in different respects. Both when it comes to products but also to develop a lot of other skills. It is not that formalized, we are trying to formalize that in a better way. We have a very good formal training about products. Every year we have personnel and dealers that can come in and train in different products and have an update in that. (…) Every time, especially the way we work, regional Head office like here in the UK, every new employee is getting the introduction program. They are sitting down one hour or so with each of us in the management team and talk about the organization and systems. If you have been here a month or two you should have a very good base of what the part of the European organization is responsible for."*

➔ ***Culture***

Volvo CE operates pretty much all over the world. One VP says that there are many different national cultures within the organization. He considers this to be a huge challenge and emphasizes the importance of having respect for different thinking and also to understand how to manage different people in different situations. He wraps it up by stating that in *theory*

everything is very easy. Many of the interviewees talk about "the Volvo way" as a cultural thing, or a way of behaving in the company. "The Volvo way" is mentioned in Volvo CE News as a document that describes Volvo's unique values, goals and philosophy (Tilley, 01/2010). VP Mike Humphrey's department works with basics in terms if working for Volvo which includes "the Volvo way", so the common culture in the company is something that Volvo actively is working with in terms of being open and approachable for example.

Culture was a reoccurring topic and was therefore included in Roos et als' (2006) suggested components, or capitals. It therefore became a part of the Distinction Tree.

➔ ***Business Systems***

Considering that the scope is knowledge and business systems, business systems are an obvious part of the Tree of Distinction. Volvo CE has according to Volvo CE News (Persson, 02/2010) historically had too many different IT-languages within the company; a heritage from the years of growth by acquisition. The red line constituted by the business systems should be what keeps a company together, but the amount of systems became so complex in Volvo CE, it threatened to strangle the entire company. Volvo CE's current strategy stimulates and provides a platform for a homogenization of the business systems and the timing to implement is eased by the low production level that followed the recession. At the same time, in such a period, there is not much money to invest in magnificent business systems. What Volvo CE need is fewer and better systems that can "talk" to each other (O'Sullivan, 02/2010). This is something that is also highlighted in the interviews by Harry Winstanley, VP for Processes and Systems who says "*we cannot create bespoke solutions, bespoke systems anymore, the costs of that are too high. And by that I mean create unique systems that are specific to a process."* This means that systems obviously are not custom made for each individual, which in turn can create some challenges regarding for whom the systems really are made. During the interviews with the managers it became evident that the feeling is not always that the systems are made for all of the users.

> "*I can't speak for everyone, for those who work in the systems on a higher level I'm sure they are good. But for us who need the information fast, for us it hasn't helped. For us it has only become more complicated. For those who work in it every day I'm sure it is amazing. It is made for the people who ordered it and want to have huge amounts of information from it*".

PM Fredrik Larsson

> *It can be a bit cumbersome. If I'm not logged in for a while I get kicked out (…) we don't work with the systems as those departments, such as order desk, that are in them every minute of the day. We might go in once or twice a week and then you don't feel the same need and confidence in it*"
>
> PM Per-Olof Grimbäck

This also goes in line with what VP Harry Winstanley said;

> "*With the passion and with the timing to try and get new systems onboard, sometimes we're cutting corners in respect to how we roll out systems and how they function for the users. I think people need to understand that a system is for a user and a user needs to be able to use the system. Sometimes that is forgotten."*

It seems the same opinion was present in most of the interviews; a system is difficult to fit to everyone. Different parts of the organization have different priorities.

One part of making all the systems talk to each other is to create common Master Data for the entire company. Such a project exists, and a team called GDI (Global Data Intelligence) is working on a common terminology for Volvo CE. The group has one goal: "one company – one language." With the common language, a common set of reports are also created with the ambition to show "the only true version" to support decisions in the company. In the future data, such as finance information, product information and supplier information, which is not in today, will also be available in the system (Global Data Intelligence (GDI) Team, 02/2010).

Some systems seem to be working well for everyone. All of the persons in the different interviews emphasized the value of the different communication systems within Volvo CE. Email and an internal communication tools, called Communicator, are according to the interviewees the most used systems within the organization. These will be presented in the section Internal Communication within the Relational Capital.

During the interviews, another reoccurring topic was what knowledge can be stored in a business system. VP Harry Winstanley puts it like this;

> "*In respect to storing the knowledge, I think that, well knowledge for me is a combination of taking data and applying a certain amount of management and common sense to it (…) I think there is an element, a human element and there is a data element to that, I think you will find it very difficult to try and capture that human element in storage."*

All of the other interviewees seem to be of the same opinion, and a lot came back to experience and personal abilities, which has been presented within Human Capital. A topic that also relates to this is Knowledge Sharing which will be further explored below.

➔ ***Knowledge Sharing***

There are different ways of knowledge sharing. Documentation, team discussions, internal training etcetera are examples of knowledge sharing and there is a difference in how tacit and explicit knowledge is shared. All of the VP's seemed to consider their employees or teams to be motivated or even very motivated to share their knowledge amongst each other. They have team meetings in which they try to have face to face as often as possible, and they stress the fact that real life meetings between people is the best way to share knowledge. One product manager speaks about team meetings where information and knowledge is shared and they can exchange experience as well as pure information. If a colleague somewhere else in Europe has the same problem, they can share their knowledge and discuss that specific problem. One of the VP's believed knowledge sharing to be a natural thing and a normal part of interaction.

Something that is strengthening the Knowledge Sharing in accordance to the importance of face to face meetings is that in the new organization, a lot more of the departments are localized in the same place, in the main office in Duxford. This eases the knowledge flow between the different departments.

There are also councils where the different Regions meet and share knowledge. However, even though they can discuss best practice it can differ a lot from Region to Region, it seemed that the most important part of the knowledge sharing was within the same Region. In recent time there has also been some cooperation between Volvo CE and for example Volvo Trucks and Volvo Financial Services. The knowledge sharing between the different parts of Volvo Group seems to be something that is currently growing.

One reason to share knowledge can according to one VP be that they want to have support from each other within the team. Another example of knowledge sharing is exemplified by one manager, who describes that he tries to capture feedback, both negative and positive, about the products, to bring back to the plant. There are also informal ways of sharing knowledge, where a manager talks around with people with different competences. More about this were written in the Human Capital chapter. The common opinion seems to be that knowledge is shared from peer to peer, rather than from a system to a person. The ongoing contact and relations with their teams and colleges seems to be the main driver of knowledge sharing. Knowledge sharing was found to be an obvious capital for the Tree of Distinction.

4.2.3 Relational Capital

Relational Capital is a part of the Distinction Three that can be both owned by the company and by the individual. Summarized in the following sections are the components that became evident during the interviews, or were part of Roos et als' (2006) recommendations.

➔ ***Network***

A general view among our interviewees was that having a personal network was important. It is therefore taken up as one of the capabilities in the Tree of Distinction for Volvo CE. Another manager stressed the importance of having a network in order to get information fast from his connections in order to attain information about products to sell, and also to find the specific buyers and sellers when a product needs to be sold.

> *"If you need some information there are always people to ask. That is of course the benefit with a big organization and then it is very important to have a personal network"*
>
> VP P-O Mattson

One VP highlighted the value of having a good network in the business, since there is a lack of formalized cross function areas in regards to corporations between different Volvo functions. Another VP expressed the interest of having a network of peers from other markets to attain information of best practices and experiences even though it not always is information that is compatible with their own market due to the vast differences.

> "*Networks provide a common goal. It is easier to find answers if you ask the right person and look in the right way.*"
>
> VP Harry Winstanley

➔ ***Customer Relations***

A general view among the managers and VP's was that customer relations are very important since they work very close with their customer. RM Anders Sjöström said;

> "*..it is not a one man's show, it is important to work with things that are important for the customer and to meet them.*"

Another manager explained that they mainly work as a support towards dealers, but see the end customer as a customer as well. He stressed the importance of having a feeling about the needs of a customer, and that experience combined with analytical skill cannot be put into a system.

> *"We try to find a solution. The customer has a need and there are no given rules. (...) We try to find solutions to make the deal."*
>
> RM Anders Sjöström

Customer Relations is both according to Volvo CE's strategy and the interviewees a priory component. The relationships with customers are also affects business systems in the respect that if it is easy to work with Volvo's systems, the customer will get a positive perception and vice versa. The importance to consider the customer in regards to the business systems and if a customer can use the system easy, is of great value since they would eventually realize that Volvo is easy to do business with and that would lead to a high customer satisfaction according to our interviewees.

➔ ***Partners***

No questions in regards to external partners have been asked, because the focus has been with the internal business areas. In that respect it seemed partners should be a part of the Tree of Distinction. Previously there have not been a lot of cooperation between Volvo CE and the other Volvo companies, but lately there has been an increased level of collaboration. An ongoing cooperation between Volvo CE and Volvo Trucks is one example, and also shows how to create value in partnerships.

> *"Volvo's role has already developed towards strengthening partnership and belief, and now the partnerships even more intense in order to keep the distribution healthy, commercial adaptable and with the conditions to fulfill the needs of our customers"*
>
> O'Sullivan, 02/2010, p.48

According to VP Mike Humphrey there is within Volvo Group also cooperation in brand platforms, workshops and with other business areas. He continues by saying;

> "*I think that* [Volvo Group companies cooperation] *are growing significantly. It probably needs to because the competition is also taking advantage of, if we look at what Cat and Neverstar are doing on the truck side, then we have a unique advantage at Volvo that our competition don't have, but equally our competition are pursuing hard to close the gap.*"

Partners are today used as a way to create value and the partnerships will according to the interviewees continue to grow, and therefore it is of value in relation to the Tree of Distinction.

➔ ***Internal Communication***

Internal communication is a crucial factor within the company according to all of the interviewees. The system most used for internal communication is Outlook.

> "*You'll probably find that every department's major system would be mail. They just don't realize it because they are so used to just using it without thinking about it."*
>
> VP Harry Winstanley

All of the interviewees praised the value of a system called Communicator. It has a chat function, a call function and a share function, where the users can share their screens with each other, and even allow the user on the other end to control their screen. One VP believes Communicator to be the most used system within Volvo CE Europe after Outlook. Another VP highlights the benefits of for example being able to chat with someone in the middle of a meeting to get input in real time.

> *"I was working with my e-business manager at a council meeting. We had a telephone meeting with the council itself but I wanted to hear what my e-business manager was thinking about what was being said in the meeting but he was in another office. But as somebody was speaking on the phone I would get* [the e-business manager's] *comments on my computer of what he thought about what was being said. That was extremely useful for me to then know his opinion. I could consider it with my response to what was being said."*
>
> VP Mike Humphrey

During the interviews it also became clear what cost benefits Communicator has impacted with the global aspect of Volvo, and the fact that a communicator call is made over the computer. It is also less formal than an email and can help users to get fast replies to short queries. VP Mike Humphrey says "*the cost of telephone is lowered and when a communicator window pops up I can answer it quickly - it is so much more quick and easy than formal e-mails*." Many of the interviewees expressed that they were basically drowning in e-mails. Communicator was mentioned as a less formal way of communicating.

> "*Volvo CE is the biggest user of* [Communicator] *within the Volvo Group – we use more than one million minutes a month and save hundreds of thousands of euro on telephone costs every year."*
>
> O'Sullivan, 02/2010 p.49

Another aspect of internal communication is the time perspective. Different parts of the organization can have different lead time.

> *"Customers always talk about minutes or hours, higher up in the organization in development departments and departments like that, there is a longer timeframe, it could be weeks and months."*
>
> PM Fredrik Larsson

When not using a system for internal communication a common way of sharing information is by team meetings and face to face meetings. All the interviewees use these kinds of meetings in order to exchange information about markets, prices, trends and experiences. By talking to people with different competencies they were able to get information in a fast and informal manner. One VP mentioned during the interview that it is in these meetings you have a chance to get to know new people and improve and use your personal network, which is very important in this business.

> *"I am a strong advocate of face to face, it is hugely valuable still. As much as we come back to our travel budget, the value of face to face meetings is even more noticeable when those take place."*
>
> VP Mike Humphrey

Internal communication, regardless of its form, is a major factor in how to manage the flow of

information in Volvo CE. The interviews showed that it is crucial to both have good systems and structures to allow the internal communication to take place. The ability to use internal communication is therefore a factor in the Tree of Distinction.

➔ ***Team***

Team working has been mentioned in the interviews as an important part of the working climate within Volvo CE. A lot of the work within Volvo CE is performed in different relations and by having a team with the ability to help each other is of great value to acquire new knowledge. VP P-O Mattsson said during his interview in regards to what to look for when hiring someone *"(…) it is even more interesting that the person you hire is a team-worker and fits the team."*

An important element in the team function is the incentives to share information and to help other people out with various issues. One way to strengthen the team is exemplified in the following quote about meeting agendas at team gatherings;

> *"We have a (…) "what's on" when we go around the table and each of us share what we've just been spending our last month doing or what we have on our next month's "to do", what we are planning to do there. Where we might need help and support from each other."*
>
> VP Mike Humphrey

Furthermore, many of the interviewees were under the impression that the balance in their teams was good and that team playing came naturally due to the mix of different competencies. An important aspect in relation to team playing and incentives to help each other was that they needed to help each other out, since there might come a time when they need support themselves. Team playing and the function of a group has throughout the interviews been a key ingredient in creating a department that could work continually even though everything is not standardized.

4.2.4 The Distinction Tree

During the interviews all relevant components suggested by Roos et al (2006) were taken under consideration. From those, together with what came up during the actual interviews presented above, a new Distinction Tree was made. As mentioned previously in chapter 4.2, it was not possible to look at only factors originating from business systems, but also factors

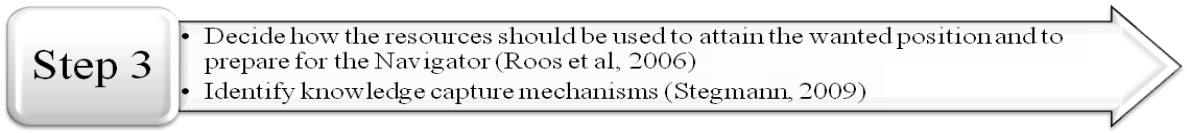
that can be seen as complementary or substitutes to business systems were taken under consideration. The starting point became knowledge *and* business systems, much because of the interview climate. It was not easy to get information from the interviewees about business systems as knowledge drivers, but people and their knowledge was a topic that was easy to get information about. This was also made due to the fact that Roos et al (2006) stress to categorize the components in the essence of which is "nice to have" and which are essential. These indicators where in turn put in a template to be weighted with a hundred points by the EMG members, which can be seen in Figure 18. This weighting will be presented in step 3.

Figure 18 – The Distinction Tree Template

Human Capital		Organizational Capital		Relational Capital	
Personal ability		Processes		Networking	
Academic background		Internal training		Customer relationships	
System skills		Knowledge sharing		Partners	
Adjustability		Culture		Internal communication	
Motivation		Documentation		Team playing (internally)	
Experience		Business Systems			

Total Human Capital	*0*	Total Org. Capital	*0*	Total Relational Capital	*0*

4.3 Step 3



This step differs from step three in the theory in respect to what will be done with the IC Prototype. In Roos' theory it says to construct the Navigator, but here it will only be preparations for constructing it, since the integration of Stegmann's theories and the focus on potential can be better taken under consideration this way. In this step the weightings from the respondents will be used and analyzed with a focus on the transformations.

Once the components has been identified and scored the next part can begin – exploring the potential of the Intellectual Capital within Volvo CE and the scope. VP Harry Winstanley finished his interview by saying;

> *"it's all very well capturing the knowledge, but how do you reuse it? What happens when you have captured it? How do you re implement that knowledge? Let's say that we have a certain amount of knowledge captured, and God forbid we have number of people who decide to move on and you have to re implement that knowledge to a completely set of new individuals. What's the process around doing that, how do we structure that? How does it actually work?"*

The respondents were asked to fill out the template with a total of 100 points. Their detailed instructions can be seen in appendix II. The average score of the different components turned out like in Figure 19.

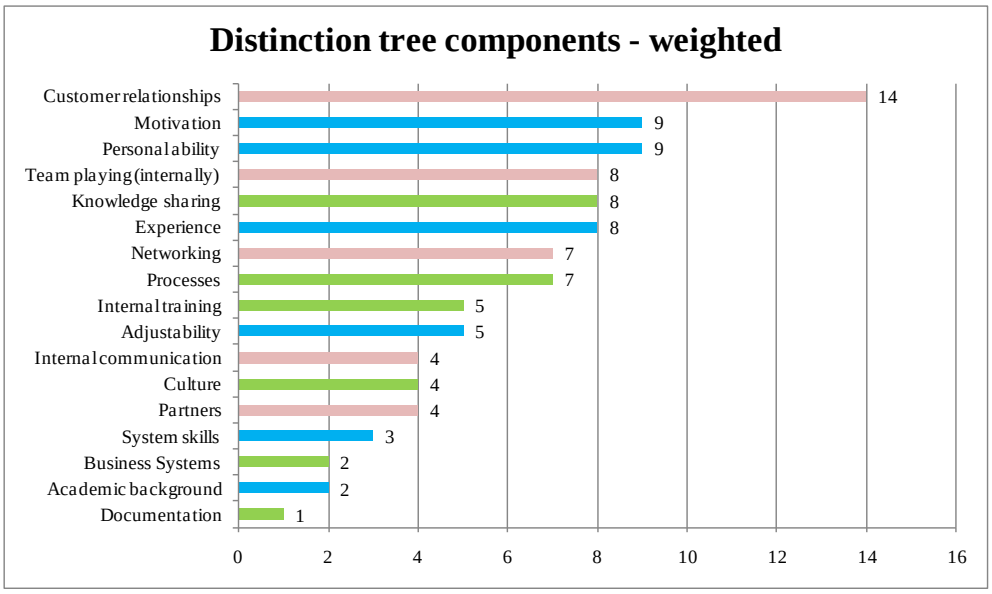
Figure 19 – The weighted Distinction Tree

Human Capital		Organizational Capital		Relational Capital	
Personal ability	9	Processes	7	Networking	7
Academic background	2	Internal training	5	Customer relationships	14
System skills	3	Knowledge sharing	8	Partners	4
Adjustability	5	Culture	4	Internal communication	4
Motivation	9	Documentation	1	Team playing (internally)	8
Experience	8	Business Systems	2		

Total Human Capital	*36*	Total Org. Capital	*27*	Total Relational Capital	*38*

Sorted from the most important to the less valued the Tree of Distinction is valuated as in Figure 20. The total amount of points in the chart is 100.

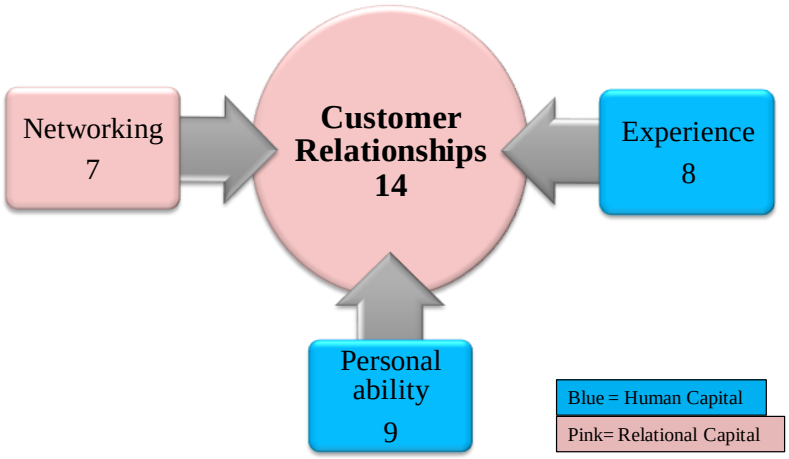
Figure 20 – Weighted components in chart



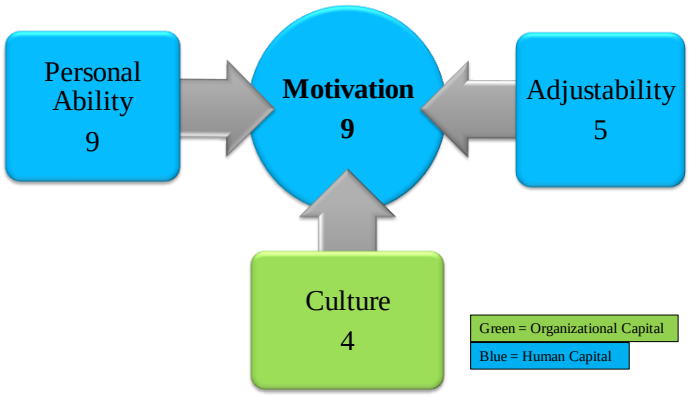
Easily concluded from the chart is that Customer Relationships is valued by the respondents as a major capability, as well as motivation and Personal Ability, followed by team playing, knowledge sharing and experience. Nevertheless, none of these components can function to their full potential on their own; Roos et al (2006) suggest looking at the transformation between them. The top six ranked components in the weighting are investigated below and analyzed according to what came up during the interviews. The reason for only choosing these is to keep it simple and not drown in information (IC-potential.com, effas.net).

4.3.1 Transformations

The most valued components were Customer Relationships, Motivation, Personal Ability, Team Playing, Knowledge Sharing and Experience from the weighting in the previous section. These are the figures which can be seen in the following models. After concluding that, the transformations were studied in the top scored components. The interview results differ a lot from the weighting, and that is what will be explored in this chapter while revealing the transformations.



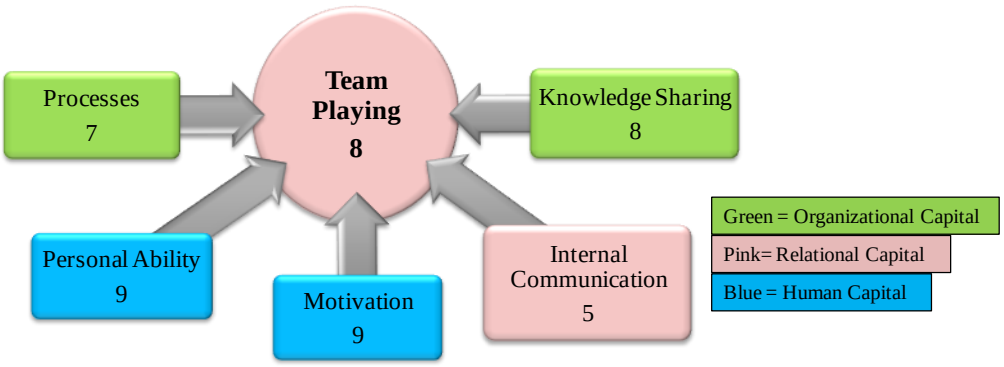
Customer Relationships were the top ranked components of all. During the interviews some topics that strengthened that component came up. Experience was mentioned as a very good attribute when it comes to customer relationships, in terms of trust and recognition. It was also evident that "*a lot comes down to how we are as people*", and that building relationships with customers were something that comes from the personal abilities. It also seemed as if Networking strengthens the Customer Relationships. Several of the interviewees mentioned that fairs and exhibitions is a good way to connect with customers.



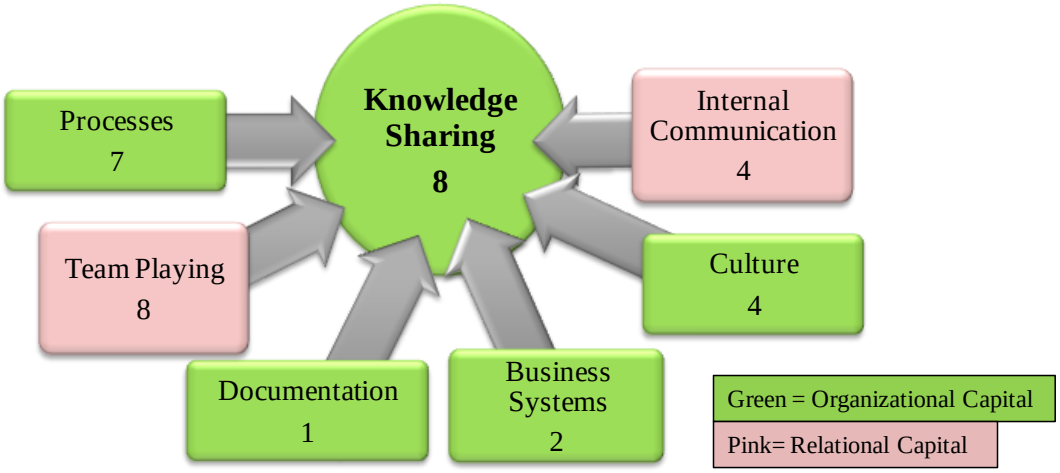
Motivation is highly scored with a nine, but the question remains – how do people get motivated? It seemed on the interviewees some parts come from Personal Ability. For example in the Processes and Systems department, a motivational factor seemed to be a certain type of personality that likes to work with systems and such. When interviewing the managers it was perfectly clear that they all like their products very much and has a genuine interest in machines. Strengthening motivation is also two less ranked components; the first adjustability with five points. Two of the VP's talked a lot about Volvo encouraging people to move around in the company and to try different departments and roles as a motivational

factor. This indeed seems to be one, but only if you are an adjustable person. Hence, adjustability seems to strengthen the Motivation component. The second of the low ranked is culture, something that was mentioned as a motivational factor during the interviews. The "Volvo way", a document set to create a corporate culture, need to fit a person's values and beliefs to create motivation.

Personal Ability is the next in line that was ranked as valuable. This is a component that is driven by a lot of different components. One point with the weighting is that components that are "nice to have" will be taken out to benefit the ones that are crucial. In this case it seemed Personal Ability was the crucial component, and the components linked to it are more considered as "nice to have". From what was discussed in the interviews Personal Ability is strengthened by the above components. Academic Background, Experience, Internal training, how the person function as a team player, System Skills and Networking ability all have impact on the Personal Ability. It is interesting that Academic Background, which during the interviews seemed to be an important factor, is not ranked high at all, nor is Internal Training. Here it becomes evident what is only considered to be "nice to have" rather than of vital importance. All of the VP's talked about the risk of losing talent in recession times, and the highest ranked of the transforming component to Personal Ability is experience and Networking – something that might be hard to replace if lost.



Team Playing is the next in line with mostly high ranked components identified as transformations. Processes are part in terms of how it is standardized, how teams are built and how they function together. This differed a bit between the different departments, but a common thing was that all of the VP's valued face to face meetings very high and believed it to be valuable for the team. Personal Ability is also strengthening the Team Playing component. One VP talked a lot about how you are as a person and how that affects the fit in the team. Behind Personal Ability lies also Experience and Academic Background, which is important to find a good mix of in a team according to the interviewees. Further, it was evident that the team playing must be motivational, both in terms of knowledge sharing and in helping each other out. Internal Communication is of great essence to the team. The teams appear to work closely together, even though spread out all over Europe, and then it is very important to have good communication channels. The final components, close connected to Team Playing is Knowledge Sharing, since the team benefits from sharing knowledge with each other.

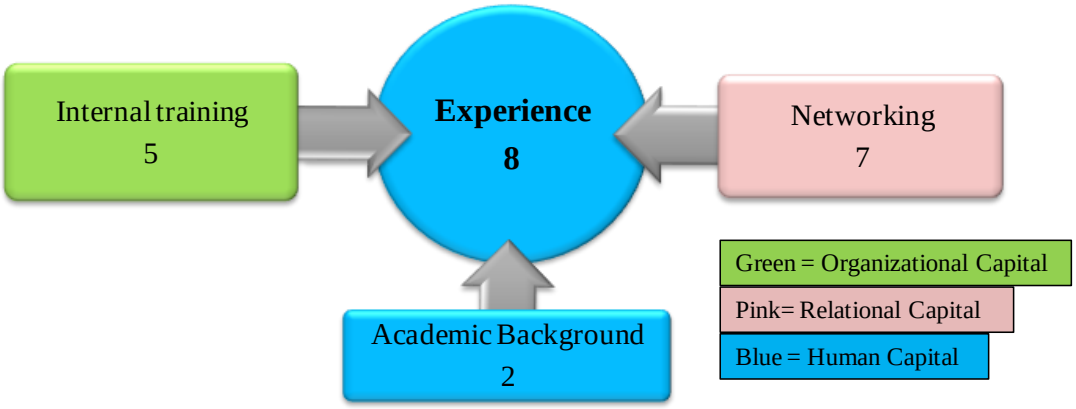


Knowledge sharing is of course very central for this thesis. In the interviews it appeared as if there were some processes around the knowledge sharing, but it was also an area where there was a lot to work on. When a person is newly hired there are processes to follow in the start up. Also when a new product was released there are processes, and there are processes to spread "The Volvo way". Still, there seemed to be a lack of processes when it comes to knowledge sharing between departments. Within the teams, knowledge is shared in meetings and sometime over the phone. There are also attempts of spreading knowledge, or at least information, by documenting on Teamplace, in cOMMon or other business systems. It looks as if there is a gap of something, the knowledge might be put in the systems, but then it seems stuck there. One VP talks about the individuality factor when storing information, and this can be a big part of the problem. There may be processes for documentation, but if they are not fully integrated with the people who do the documenting, there is no real use for them. Also, it seems the managers spoken to find it very time consuming to take information out of the systems. The main reason for that seemed to be that it is time consuming and that in turn seemed to have two reasons; one is that the system may be slow in itself and the other is that the information stored could be hard to find.

One VP mentions knowledge sharing as a cultural thing, some cultures is very keen on sharing their knowledge while others rather keep it to themselves. The impression is that the interviewees believed that the challenge is to create an open culture in the company; the "Volvo way." There are also other, more hands on cultural differences, such as making systems functioning regardless of which literary language the users use.

Internal Communication is also a strengthening component to Knowledge Sharing, especially since the general opinion seemed to be that learning from peers is the best way of learning.

Knowledge Sharing is an important and complex part of the business, and the different components that strengthen it are not always highly valuated. There seems to be a high motivation to share knowledge amongst each other when someone asks for it or when the team gets together; hence sharing tacit knowledge. However, the explicit knowledge does not seem to be prioritized and sharing knowledge through systems and documentation is not something the persons we interviewed seems to value. This is not to be confused with information and data. Those parameters are stored in great amounts in the business systems and documentations; it is the knowledge aspect that might be lacking.



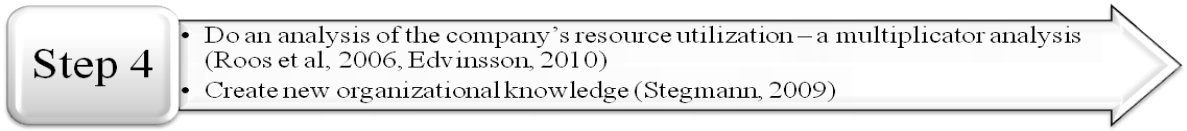
The final of the highest ranked component is Experience. Experience is not something that simply appears; it needs to be developed, and during the interviews different ways of gaining experience came up. One way is of course by working, and sometimes a person can be recruited based on their previous experience. It can also be an academic background and the experience that comes with that.

In the aspect of learning Stegmann (2009) had given example of three different ways to learn; intelligence, experience and experimentation. The first way, intelligence, means learning by existing information which in the components presented above would be Documentation and Business Systems. None of these are valuated very high. The next way, Experience, means learning by existing reality, which is probably the most utilized way of learning at Volvo CE. The third is experimentation and due to the nature of the part of the organization which is the scope, that is probably not at all utilized in Volvo CE Europe. InCas (2008) suggests concretizing a company's Intellectual Capital. When doing so the first step is to diagnose the

company and thereby see what decisions will have the most favourable outcome. This will be further valuated in the next step.

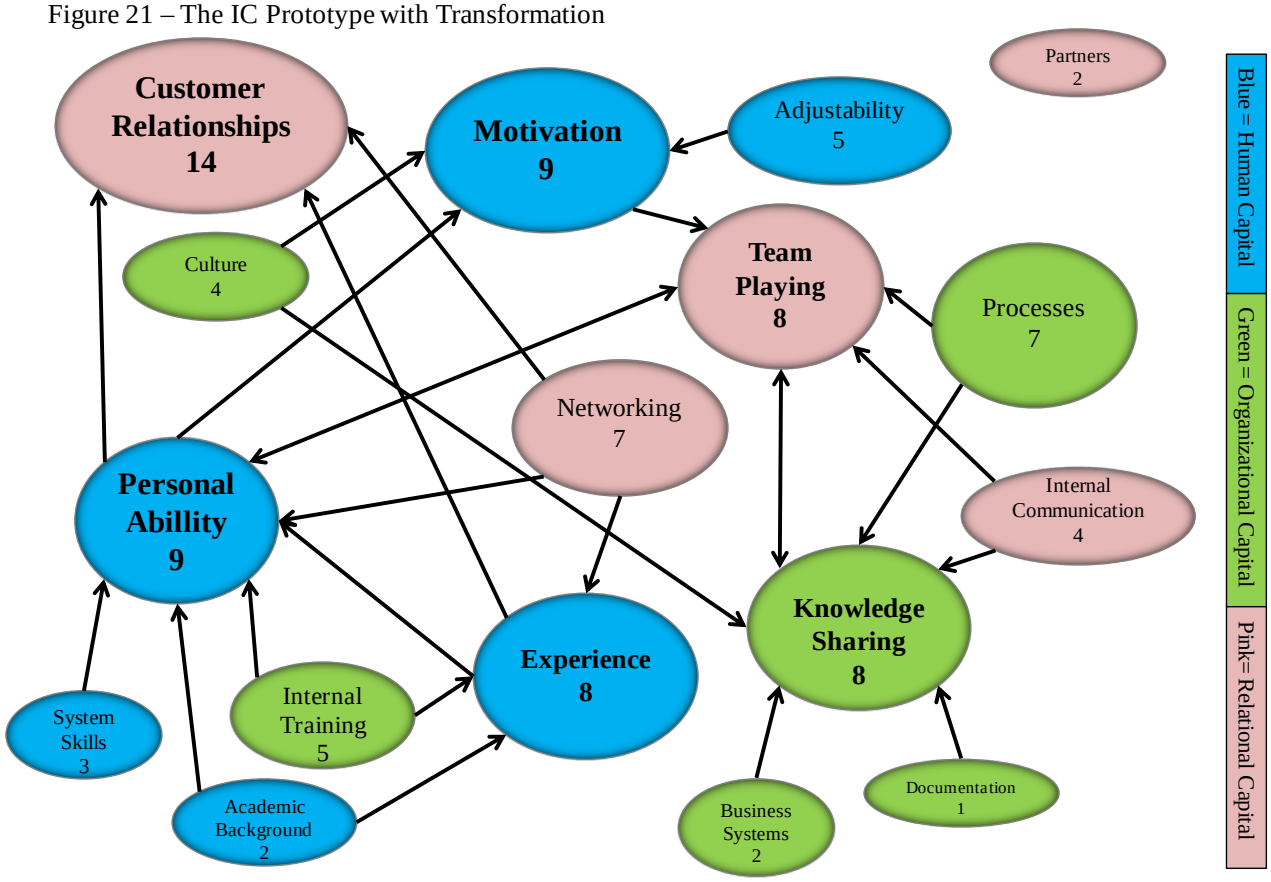
The transformations are now ready to be put in an IC Prototype, which will be done in the next step. In the Distinction Tree weighting, there is a pattern where Organizational components are lower ranked then Human Capital and Relational Capital. It is important to realize that the organizational components are value drivers to the others; without them the other parts might function less good, or not at all.

4.4 Step 4



In step three the six highest ranked components were explored. Put together in Figure 21 the transformations strengthening the highest ranked components can be seen. The size of the text and the bubble represents the previously presented weighting from the respondents, which can be seen as a figure below the component. The colour of the bubble indicates which capital the component belongs to. Partners is the only component without an arrow to or from it, this is because there were no obvious connections from the interview material.

Figure 21 – The IC Prototype with Transformation



Note: The Values are from the weighting in the Tree of Distinction – adding up to a total of 100 points.

As can be seen in the model almost all of the components are connected in some ways. Please note that there can be more connections between the lower ranked components, but those have not been taken under consideration, due to EFFAS (2008) and IC-potential AB's recommendations to keep the prototyping simple. In this image it is clear that a lot of the low ranked components still are important value drivers for the highly ranked ones. This might mean that they do not get enough attention in the organization. The purpose of the above IC Prototype is to highlight the potential of the components, and thereby guide to how new organizational knowledge can be created.

As can be seen in the figure 21, Business Systems are very low ranked by the respondents and in respect to the other components, all that could be connected to them from the interviews, was Knowledge Sharing. Knowledge Sharing was ranked very high among the components and the respondents found it to be an important component within the organisation. According to Edvinsson et als' (1998) multiplicative effect there would be a potential in investing more in the Structural resources that spur the components that were seen as valuable in the

organisation. Read from the IC Prototype it would be a good idea for instance to invest more in the components such as Documentation, Business Systems, Culture and Processes.

The reflection interview with Volvo IT was made with Hans Ristner, Vice President of Strategy & Operational excellence. A summary of the interview and an introduction to Volvo IT can be seen in appendix IV. Hans added several interesting aspects on the created prototype.

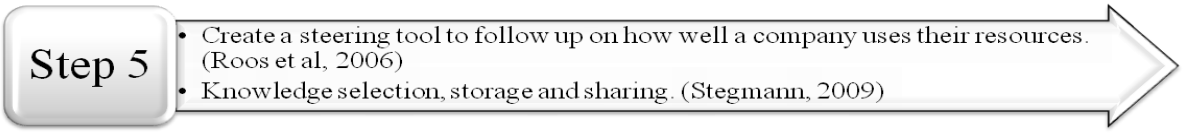
One interesting aspect that came up was regarding Partners that in the IC Prototype has no connections to the other components, nor a high ranking. Hence, partners do not seem to be a valuable component for Volvo CE. Perhaps this can be an effect of Volvo's decentralized structure. Another issue that came up is that Volvo Group does not seem to have common budgets for system integration. This could also be a reason for not cooperating more in system investments.

Throughout the interviews with Volvo CE, there did not come up any substantial problems with storing information, but rather the difficulty of structuring and reusing it. Volvo CE seems to lack an effective filtering tool in order to get the right information to the right employee. During the reflection interview the same problem was mentioned. Ristner (2010) explained that there are a lot of potential in the information. Volvo IT has the keys to lock up the doors to a lot of information between the Volvo companies, but Ristner emphasized that Volvo IT is not in position to filter the information.

When a business area orders a business system, Volvo IT has people in their organization for usability aspects. The user friendliness of the systems must be ordered of the ones that order the systems, and Ristner (2010) said that people without degree in information technology do not understand how important usability is, and therefore do not pay extra money for that. This could be one factor that explains why information is being stored but hard to use. It also strengthens the explanation of that Business Systems and Documentation not being perceived as very valued components.

With the help of patterns seen in the empiric material there will in the next step follow an IC Prototype, showing where the authors to this thesis see Volvo CE's potentials.

4.5 Step 5



4.5.1 IC Potential

In Figure 22 there are two types of arrows. This arrow; → indicates that the potential of the component is well utilized in Volvo CE. These components will not be further investigated because of this. The other arrow; ↗ indicates that the potential of the component is not fully taken advantage of. This means that the component has a potential to grow and to transform together with other components.

Figure 22 – The IC Potential

Capital	Component	Value	Potential
Human	Personal Ability	9	→
Human	Motivation	9	→
Human	Experience	8	→
Human	Adjustability	5	→
Human	System Skills	3	↗
Human	Academic Background	2	→
Organizational	Knowledge Sharing	8	↗
Organizational	Processes	7	→
Organizational	Internal Training	5	↗
Organizational	Culture	4	↗
Organizational	Business Systems	2	↗
Organizational	Documentation	1	↗
Relational	Customer Relationship	14	→
Relational	Teamplaying	8	→
Relational	Networking	7	↗
Relational	Partners	4	↗
Relational	Internal Communicatio	4	↗

Note: The Values comes from a total weighting of 100 points done by EMG members. The arrows and comment are the authors' interpretations.

Human Capital

Human Capital is, as mentioned in the theory chapter, the part of the Intellectual Capital that cannot be owned by the company. Human Capital is one of the factors in the multiplicative effect. If HC = 0, the product of HC x SC will also be zero, and if HC = 1, the product of HC x SC will be the value of the Structural Capital; hence the Organizational and Relational in this model.

The Human Capital seems to be well taken care of and well utilized in Volvo CE and the potential is nurtured. Not all of them were highly ranked in the Tree of Distinction, but based on the discussions they are all valued with the exception of the component *System Skills*. That component however may be underestimated as well as underutilized. There were several

occasions during the interviews where it came up that systems are made for the makers, not the end users. This also implies that the end user has trouble withdrawing information from the systems. More Internal Training in regards to the systems and easy accessed documentation on how to use them might simplify the working process for individual employees. Hence, System Skill is a component that could create value for Volvo CE, if investments were set on it. At first glance it may seem as a costly thing to do, but according to Stegmann's (2009) and Edvinssons et als' (1998) theories, the return on capital is increasing when it is a good Intellectual Capital investment. If Human Capital is higher the multiplicative effect will also make Structural Capital higher. The outcome in relation to the cost can be greater, therefore it is risky to only look at the cost – the potential must be revealed. The uncertainty of investing in something that leaves the building, when training the employees to enhance their Systems Skills, can also be argued against. If investing in the employees' System Skills processes around the training can be formalized, the documentation part is left in the building and so on. It is then only a small part of the investment that walks out the door when the employees go home.

Further in this component, it is of great essence that the employees feel motivated to enhance their Systems Skills. When introducing a system to an end user, it should not focus on the system; it should focus on what in the system makes their job easier. With this there is a huge potential in System Skills.

To use the component's potential to the fullest there are a few things that can be improved – to realize who the systems are made for and to make those people understand why they need the systems. This is likely to create a motivation to enhance a system skill that is in balance with what skill is needed. Today in Volvo CE, supported from our empirical material, the systems are sometimes too complex, and users find it hard to get the right information out of them, or just don't see the benefits of them.

In conclusion, the potential of the Human Capital seem to be well utilized. On the other hand, a strong focus on the Human Capital can create vulnerability. As mentioned in the interviews, there is a great risk of losing talented people in redundancy times. This is one reason to try to transfer as much of the Intellectual Capital as possible to the structural side. There is also one vital potential that is weak in the Intellectual Capital at Volvo CE - the link between the

Human Capital and the Structural Capital, hence the coming two themes. To get a multiplicative effect there need to be an "x" between the HC and SC.

Organizational Capital

Within the Organizational Capital, which was the lowest ranked by the respondents to the template, there are a lot of potential seen that can be better utilized. Knowledge Sharing, Internal Training, Culture, Business Systems and Documentation are all components that have more potential than what is seen today. Based on the empirics Volvo CE does store information in systems but they do not always utilize it in an optimal way. For instance there are no clear standardization about what to store and how much. As it looks today, knowledge is mostly shared from peer to peer and one reason for that seems to be the complexity of the systems. The user friendliness of the systems sometimes is forgotten, which seems to be one of the reasons for that some people do not use systems very much in their daily work. If Volvo CE would consider finding a solution to be able to invest more in user friendly systems, knowledge sharing thorough systems can increase. Hence there is potential to increase the knowledge sharing in the SC if creating the structure right to get the information out of the systems. The documentation is a problem in its' own. Harry Winstanley asked the questions "*it is all very well capturing the knowledge, but how do you reuse it*?" One answer to that question could be to find a way, a channel, to get the right information, and the right amount of knowledge, to the right person. If there is an information overflow the knowledge will drown in the surrounding data, leaving the knowledge hidden. This has appeared to be a problem in Volvo CE.

Volvo CE is working hard with process steering, and their Business Systems can be seen as a tool supporting these. In that matter it is important to see the potential in using systems as tools for processes. In the empirics it can be read that there are a lot of processes in Volvo CE in place, but that a lack of documentation of them into systems.

The Culture seems very strong within Volvo CE and the reason for the up pointing arrow in this component is because Volvo CE has potential in implementing more focus on knowledge in their culture. According to Stegmann (2009) the corporate culture is a critical part of knowledge management and it must be internalized throughout the whole organization. As it looks now people forget the information that is put in the systems and hence do not look there. Stegmann (2009) suggest developing knowledge oriented staff such as knowledge

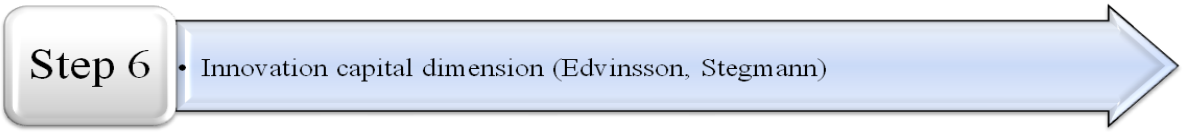
managers, new knowledge product managers and chief knowledge officers. This is because of that it is essential to support and reward people working with knowledge management. This goes in line with what Ristner expressed in the reflection interview regarding that the initiatives for user friendliness of systems must come from the purchasing company.

To conclude there several things that indicate that there are more potential in Volvo CE's Organizational Capital to exploit. Volvo CE must develop mechanisms that make the knowledge in the systems explicit so it can be used by HC and increase the interaction between Structural Capital to Human Capital. Therefore many of the arrows in the Organizational Capital points up and can be seen to have more potential than what today are considered in Volvo CE.

Relational Capital

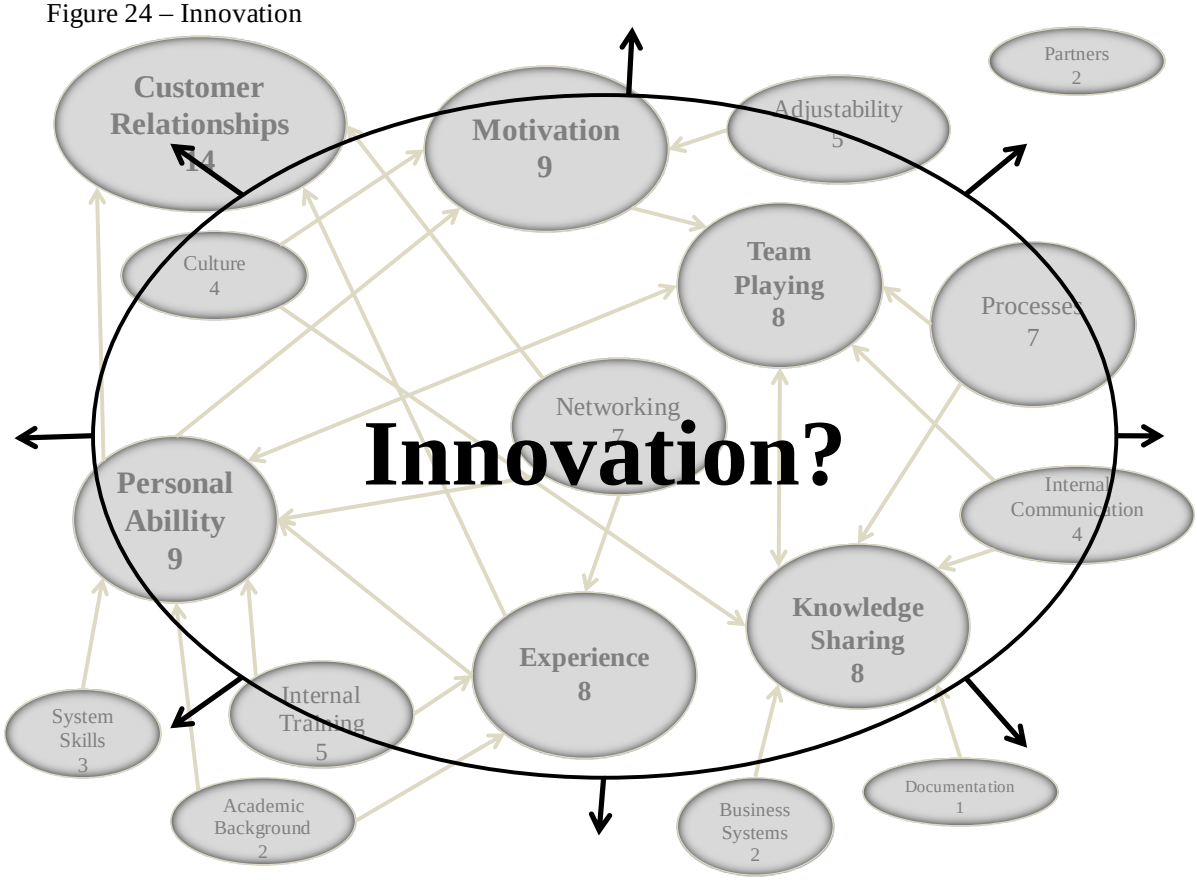
The Relational Capital is according to Roos et al (2006) something that can be owned by the company, or left in the employees' heads, depending on the nature of the business. At Volvo CE it is probably a little bit of both. During the interviews it seemed as many relations are built on personality and individuals rather than from the organizational structure. Customer Relationships are highly valued according to the template and during the interviews it seems as if potential there is well taken care of. Although, the Customer Relationships seem to be captured on the human side rather than as an organizational asset, meaning that some of the potential gets lost. This is another example of where the knowledge risks walking out the door and not come back. One way of keeping the knowledge in regards to this within the company walls is team playing where they discuss a lot of issues, amongst others about customers. This heightens the level of knowledge that is made structural, hence stays in the building. The potential of team playing seems to be well utilized within the specific departments. The next component, networking, also has more potential than what is utilized today. It was above medium ranked in the template, but during the interviews there were no evidence of any formalized way of networking or processes for the same. Again, it comes back to how we are as people, connecting a greater risk to the component. The internal communication offers a lot of tools in regards to networking. The communicators' function as a chat tool and the outlook register displays all employees within Volvo Group so that they can be easily contacted. Some aspects of networking are negatively affected of moving functions into business systems. One example is where product managers previously called people in the organization to ask

questions about the products, something that now is supposed to be done through a business system.



4.6 – Step 6 - Innovation

Figure 24 – Innovation



There is still one important resource that has not been reflected upon – innovation capital. This has not been in the scope of the thesis and hence it has not been brought up during the interviews. There is therefore no empirical material to reflect upon. It is nevertheless interesting to speculate in where the innovation can appear within the component reflected upon. The central components for this study, business systems and knowledge, are of course very appealing parts for future innovation. A good understanding of Volvo CE's IC and the transformations among them can help to push innovation in these areas.

5. Conclusion Summary

5.1 Conclusion Summary

Volvo CE captures a lot of knowledge in their documentation and huge amounts of data and information in their business systems. Hence there is a lot of information and data left in the building when the employees go home. However, it is perhaps not transferred into human or organizational knowledge; it is rather left in the systems. The density of the documentation structure and the complexity of the business systems do not easily enable a user, an employee, to capture the knowledge. Also the structure of the business and the processes does not always enable a user to know what they are looking for.

In regards to documentation the issue is two dimensioned. From one end the ones who put the documentation in storage does not associate it with a cost. The other is that the notion sometimes looks to be "the more the better", interpreted from the amount of Teamplaces and the quantity of information in them. So, there is a considerable storage cost and there is an information overload making it hard to filter and find the valuable information. Documentation was very low ranked in the template, meaning that it is considered nice to have, rather than being considered as an important organizational component. That can be a reason for the lack of attention paid to it. Nevertheless, documentation can, if managed properly, be one way of transforming Human Capital into organizational property. Stegmann (2009) suggest filtering information and creating organizational tools for handling it. If managed in a more effective manner documentation is a component that very well could enable a multiplicative effect.

In regards to business systems, an obstacle that was evident in several of the interviews was that systems are made for the person who makes it, not for the end user. There are tools to make usability better, but there are no budgets or priorities for using these tools. This was also evident when looking at the weighting regarding business systems, which was very low. But how is the business supposed to be run without them? Edvinsson's notion about IC's increasing returns, compared to tangibles decreasing returns, should be taken into consideration when evaluating the cost. According to this notion, investing in IC has a positive return on capital (Stegmann, 2009)

The pattern that has been identified when exploring the components is that Volvo CE has a clear awareness of their strategy, which permeates the components. Volvo CE has a very good Human Capital and a good Structural Capital but no multiplicative effect in between. It is HC *plus* SC rather than HC *times* SC, leaving a lot of unused potential within the IC components. A reason could be that there, to our awareness, is no pronounced responsibility for knowledge sharing. There are processes, systems, documentation and so on but there seem to be a lack of pure knowledge focus. A corner stone for innovation in companies is knowledge, so it is an important component to emphasise. Understanding the components and enabling the "x" between HC and SC can be a driver of innovation and enhance the organizational brain.

Seen from an academic perspective it would have been nice to be able to create a full scale IC Prototype, but due to classified material and limited time it has not been possible. Still, the learning journey from making this study has been tremendous, and something that really has become obvious is what impact a revelation of the hidden values in a company can have.

5.2 Summary of the components and their potential

Figure 23 – A summary of the IC Potential

Capital	Component	Value	Potential	Summary
Human	Personal Ability	9	→	The potential is well taken care of.
Human	Motivation	9	→	The potential is well taken care of.
Human	Experience	8	→	The potential is well taken care of.
Human	Adjustability	5	→	The potential is well taken care of.
Human	System Skills	3	↗	If investing in the employees' system skills a lot of potential can arise.
Human	Academic Background	2	→	The potential is well taken care of.
Organizational	Knowledge Sharing	8	↗	Peer-to-peer is well utilized but not other channels.
Organizational	Processes	7	→	The potential is well taken care of.
Organizational	Internal Training	5	↗	Need formalizing.
Organizational	Culture	4	↗	Good potential utilization but a knowledge aspect would be good.
Organizational	Business Systems	2	↗	Is not utilized in a knowledge creating way, only operational.
Organizational	Documentation	1	↗	Structure and filtering can rise potential.
Relational	Customer Relationship	14	→	The potential is well taken care of.
Relational	Teamplaying	8	→	The potential is well taken care of.
Relational	Networking	7	↗	There are no formal channels for networking which could be of value.
Relational	Partners	4	↗	Business Areas could be a value driver if not seen as competition.
Relational	Internal Communicatio	4	↗	Improve, not increase. Filtering function and what is relevant to whom?

Note: The Values comes from a total weighting of 100 points done by EMG members. The arrows and comment are the authors' interpretations.

6. Next step

Volvo CE has a very good Human Capital and a good Structural Capital. Nonetheless, there are some challenges in using the potential of these as Intellectual Capital. To fully discover this, a full scale IC prototype would be beneficial.

One thing that could strengthen the transformations between the Human Capital and the Structural Capital, creating potential and ability to innovate, is to take the advice from Stegmann (2009) about having a CKO – a Chief Knowledge Officer. Within that role there could be a filtering function, making sure the right knowledge or information would get to the right person. The function would make sure, not only that the correct knowledge is spread to the right person, but also see to that knowledge that is *not* necessary for someone could be filtered out. That would make the information flow more manageable and easier to handle. The CKO should further reflect upon what knowledge can be documented and how it should be stored to be easily reused. This way there could be one function with a strong focus on the Information, and remained focus on the Technology from the functions handling that today; creating a balance within IT. That role would require insight in the different departments and work for knowledge spreading along all of the company lines. This way Volvo CE could strengthen the link between the Human and the Structural Capital, creating a multiplicative effect.

Another step for Volvo CE is to realize the benefits of systems with a high level of usability rather than looking at the cost of implement it.

7. Our thesis journey and future research suggestion

It has been a rocky but rewarding road towards exploring the depths of Intellectual Capital. We first came across the topic during a lecture with Leif Edvinsson where he opened our eyes for what constitutes the gap between a company's value and its' expected value, its' potential. As it turned out, the deeper into the IC concept we dug, the more complex it became. It is an immensely interesting topic, but with large amounts of ways for measuring and many different distinctions of the concept, it was a lot to take in and get a grip of. However, with the eye on the finish line we are very happy that we chose this topic; we have learned so many new things and our eyes are opened for a brand new perspective to carry with us when leaving school for going out in the "real" world.

It has also been very fascinating to explore the Volvo World. The people at Volvo have been very generous and open throughout the entire journey and we are very grateful to have gotten the chance to interview them. Everyone that we have talked to is extremely busy, so for them to taking the time to talk to us is both flattering and humbling. It has been fascinating to meet such competent and inspiring people.

One final wish is that we would have had more time. It took quite some time and effort to get a good enough understanding of IC to be able to plan out the study. The lead time at Volvo has also been protracted, and was not helped by the ash cloud which affected the frequently travelling VP's. The ones we have interviewed are all very busy people so when we realized that we would benefit of having more focus on the innovation dimension, additional interviews were not possible to arrange. We are still happy and feel that we have reached our goal, but a suggestion for future research would be to do a full scale IC study, not limiting the study to business systems and knowledge. That would open up for looking at the potential and the innovation possibilities within Volvo CE. Also, a study about the impact of having a CKO at Volvo CE would be tremendously interesting, and is something we would recommend for future research.

The ten weeks has come to an end. We have, as mentioned, learned a lot, mainly about Intellectual Capital and its' possibilities, but also about Volvo, about writing a thesis and about each other. It has been a great journey and an excellent finish of four years of studies.

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Leif Edvinsson

Appendix I – A summary of EFFAS 10 principles

Table 1 - EFFAS 10 principles for revelation of intangibles *Source: effas.net*

1. Clear link to future value creation
It is important that indicators show a clear link to the company's future value creation. This link should be spelled out clearly and be possible to incorporate in a prototype.
2. Transparency of methodology
The indicators chosen should be easy to understand and easy to measure. The company should also be able to explain why and how these indicators were chosen.
3. Standardisation
It is crucial that indicators can be benchmarked in order to be of use. The standardisation of indicators should have three levels of specificity (low, medium, high). On the low level indicators should be generally relevant for most companies and on the middle level they should be more specific sector wise. The indicators on top level should be the ones specific to the individual company.
4. Consistency over time
A way of benchmarking is to compare today's company indicator values to the historical ones. To be able to do so, it is essential that the indicators are consistent over time. If an indicator is replaced over time there has to be a good reason for doing so.
5. Balanced trade-off between disclosure and privacy
There should be a balance between the disclosure of intellectual capital and secret information. There is always a risk that some information could damage the company's competitive advantages. Hence, there should be a management process to decide what information can be published and not.
6. Alignment of interest between company and investors
It can be difficult to align companies' and investors' interests due to costs relative to benefits. EFFAS recommend companies to compromise; to be able to progress in the disclosure of intellectual capital it is important to align the different interests of companies and investors.
7. Prevention of information overflow
There is no room for information overflow on intellectual capital in companies' day-to-day work and therefore the indicators presented should be the most crucial ones.
8. Reliability and responsibility
To be able to ensure the reliability of an indicator EFFAS declares that it should be verifiable, meaning that the source must be possible to track.
9. Risk assessment
Each indicator should be risk evaluated and future changes within the company should be taken under consideration. Thereby it is possible to prevent their associated risks that could damage the company's operating performance.
10. Effective disclosure placement and timing
The information on intellectual capital should be communicated effectively and frequently. EFFAS suggest having broader information of a company's intellectual capital in the annual report. The prototype should have a narrative over the indicators and clarify the link to the company's future value creation. Another suggestion is to have a separate IC Report additional to the company's reporting system.

Appendix II - template sent to EMG

This is the communication with the EMG members who have responded to the template. First is a starting letter to them, then the actual template and after that an explanation. Last is a summary of their weighted responses.

1. Letter

Dear Sir,

Thank you for taking the time to fill out the template. You will find it in the next sheet. In the third and last sheet you will find a short guide to the template.

All of the resources might be considered "nice to have" but weighting them against each other is considered more controversial. This weighting can help decide which resources can be taken out and which are essential for the business. It is further important that the resources are considered from both a qualitative and quantitative perspective. To perform the weighting a hundred "points" is shared between the tree resource types. It does not matter how many points end up in each category, for example all 100 point can be given out in human and none in organizational and relational. However, the total amount cannot be more than 100.

You will find the template in the next sheet. Don't hesitate to come back to us with questions!

Please send the filled out template back to us when you are finished. Thanks a lot!

Best Regards
Helena, Max and Jennie

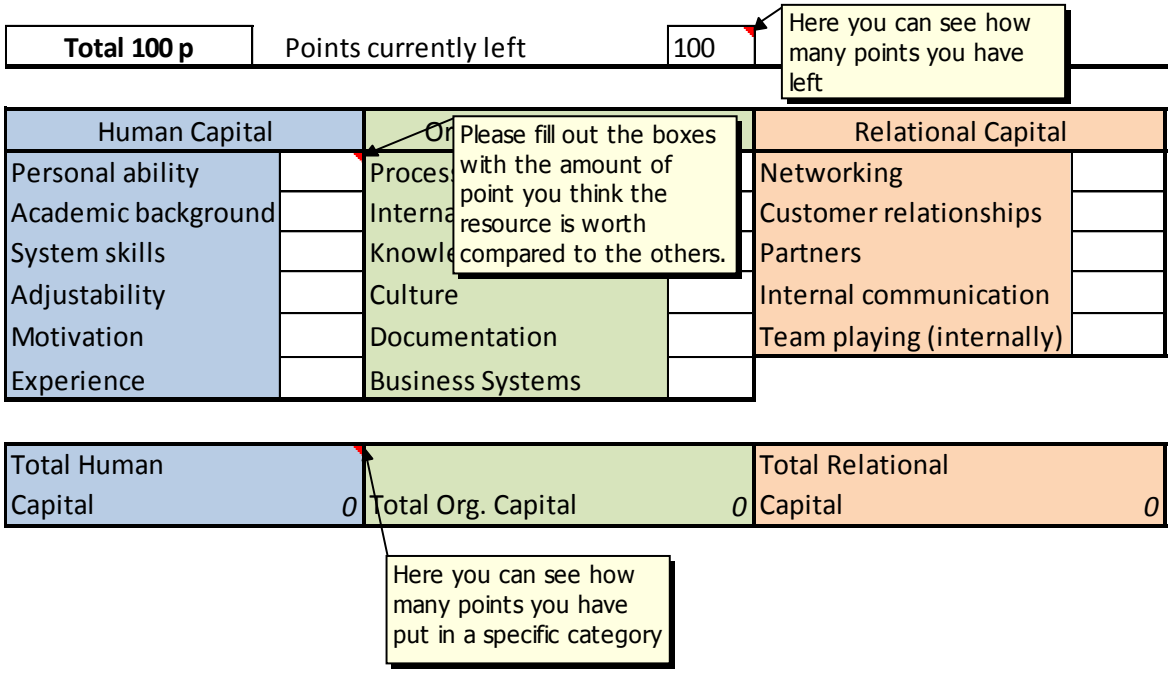
2. Template

Total 100 p	Points currently left	100

Human Capital		Organizational Capital		Relational Capital	
Personal ability		Processes		Networking	
Academic background		Internal training		Customer relationships	
System skills		Knowledge sharing		Partners	
Adjustability		Culture		Internal communication	
Motivation		Documentation		Team playing (internally)	
Experience		Business Systems			

Total Human Capital	Total Org. Capital	Total Relational Capital
0	*0*	*0*

3. Instruction



4. Response Summary

Human Capital		Organizational Capital		Relational Capital	
Personal ability	9	Processes	7	Networking	7
Academic background	2	Internal training	5	Customer relationships	14
System skills	3	Knowledge sharing	8	Partners	4
Adjustability	5	Culture	4	Internal communication	4
Motivation	9	Documentation	1	Team playing (internally)	8
Experience	8	Business Systems	2		

Total Human Capital	Total Org. Capital	Total Relational Capital
36	*27*	*38*

Appendix III - Intellectual Capital thesis

A letter sent to Harry upon his request that were distributed in forehand to the EMG members we have interviewed.

Intellectual Capital aim to show values that cannot be seen in the balance sheet or P&L. A company's resources can according to IC theory be split into five different parts where the traditional are *physical* and *monetary* resources and the IC resources are *human, organizational* and *relational*. A definition of Intellectual Capital is "*all IC-resources, or transformations of these resources, that fully or partly is controlled by the company and that contributes to the company's' value creation*". The focus is what in the organization creates accumulative value and how those parts can be explored and optimized. Our aim is to explore this by looking at business systems and processes around them.

Intellectual Capital is built up by many different elements and what we have chosen to focus upon is "process capital" which is part of the Organizational Resource. Process capital includes business systems, infrastructure among them and so on. What we aim to conclude is what knowledge is actually captured in the business systems in addition to what knowledge is in individual employees "heads". Our focus will be set on what knowledge is left in the building when the employees go home. We want to explore how Human Capital can be transferred into Structural Capital and thereby tie knowledge within the organization. We want to look both at how this is done today and how it can be maximized in the future.

To be able to do this we would need access to strategy documents and interviews with people that are involved in the infrastructure around internal systems. We have great hopes that we can bring something to Volvo's in terms of a good valuation of where value is created and how it can be maximized.

We also have strong support from our supervisor, IC Professor Leif Edvinsson. Thank you for taking the time to read this and we hope that you like our concept. Please do not hesitate to come back with questions or comments.

Best Regards

Jennie Monthelie
Helena Jakobsson
Max Kjellström

Appendix IV - Reflection interview - Volvo IT

In this appendix there is a presentation of Volvo IT, followed by a summary of the interview with Hans Ristner. The interview has been taken into consideration during the analysis from step 4 and forth.

Background

Before the conclusion was to be drawn an interview was made with Hans Ristner, Vice President of Strategy & Operational Excellence in Volvo Information Technology. Volvo IT is a business unit and supplies all the different business areas within Volvo Group with IT and processes (Hans Ristner, 2010). It was therefore interesting to get reflections that could open up a wider organisational perspective.

Volvo IT is a company within the Volvo Group and has attendance in more than 19 countries. They supply corporations with reliable industrial information technology, solutions, consultancy and telematic services. Their customers are mainly found within the car industry, but recent years have shown an increase in new industries, supporting companies such as Skania, Ge Healthcare, ASSA, Gambro etc (Volvo IT company presentation, 2010).

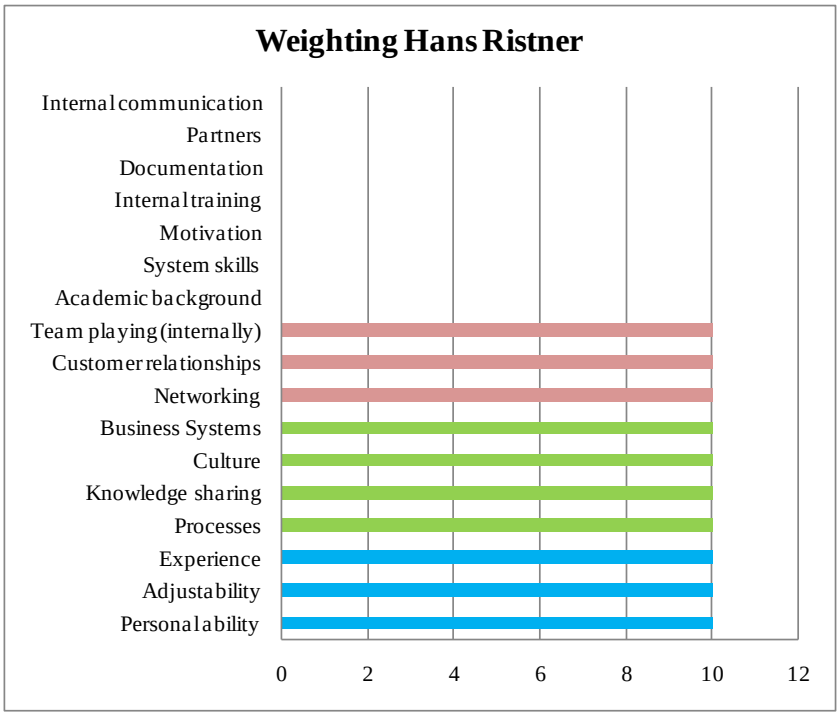
Volvo IT works with rationalisation of information technology and covers all fields in the industrial processes in order for companies to focus upon their own core businesses. They also work with system integration within the processes in order to make the flow of information more efficient (volvogroup.com). They produce solutions for the whole industry chain, handling product development, sales, manufacturing, after sales, administration etc. The service support offers professional IT consultancy, support the end users of the systems and keeps the systems running (Volvo IT company presentation, 2010).

Reflection interview

The interview with Hans Ristner started out with a short briefing about the IC concept and the different IC components that were found within Volvo CE. The Tree of Distinction was distributed to Ristner before the discussions of the results from Volvo CE took place. Ristner weighted the components in the Template as follows;

Human Capital		Organizational Capital		Relational Capital	
Personal ability	10	Processes	10	Networking	10
Academic background		Internal training		Customer relationships	10
System skills		Knowledge sharing	10	Partners	
Adjustability	10	Culture	10	Internal communication	
Motivation		Documentation		Team playing (internally)	10
Experience	10	Business Systems	10		

Total Human Capital	*30*	Total Org. Capital	*40*	Total Relational Capital	*30*



In comparison to Relational- and Human Capital, Organizational Capital got the highest score in the weighting from Hans Ristner, which is a bit different from the results from Volvo CE. When informed about the differences Ristner said that he was not surprised. He agreed with the notion that knowledge is mostly spread from human to human and not from system to human. He also explained that the main problem with the integrating of the information in the systems regards the ownership structure of the applications; systems stored with product information as an example. He further explained that it is the person investing in the application who decides how it should be integrated. He also said that the owner always is a business unit or a business area.

Hans Ristner mentioned an ongoing discussion within Volvo regarding which systems that should be common between their areas and units. He also mentioned that other corporate groups with common IT strategies have shared budgets for development of common systems, something that Volvo has chosen not to have. Ristner implied that the biggest barrier today for sharing information, is the person investing in the application who decides what should be integrated and what should not. Further in the discussion the question about how the usability of the system could improve came up. Ristner explained that they have groups within Volvo IT that are working full time with system usability but the main issue is that the investors often lack competence in IT and therefore do not understand the importance of the usability. He said for as an example if you get a system order from a CEO and there is a budget of 5 million SEK and no money is put on usability, there won't be any usability because they will not get one additional million to spend on usability. Another complexity that Ristner mentioned in relation to this was that there is a checklist when creating an application and that usability should be considered, but there is no follow up regarding if it has been done.

Hans Ristner thinks that Volvo generally is good at storing information into systems and documentation. When working with Volvo IT's strategy he finds the "T" in the IT very big in relation to the "I", that they work a lot with the technology part in the strategy; what technologies they choose and what platforms to possess and so on. But regarding the "I" he said that the information strategies, which should define how the information should be more

easily accessible in the Volvo Group, is almost absent. Ristner further explained that the reason is there are mostly engineers where he works, and that is how engineers perceive the systems.

In the end of the interview Hans Ristner finished the conversation by telling that Volvo IT has the key to unlock the doors for the information flow if they were permitted to. The potential is there. If the structure is created so that all the information will be accessible, like open data, then people can aggregate the information so that business decisions can be made more effective. This is something, according to Ristner, Volvo needs to improve. He also said that the people that will use the information are the ones that should see the need in usability because they are the ones that that can see the needs when meeting customers. Hence the filter of information must be decided by the persons working in the systems.

Appendix V – Glossary

Business System: Tools to support business activities and to share information.

Components: Values, which together forms a company's different capital. An illustration is Human Capital which can include following components; personal ability, attitude, academic background, adjustability, motivation and experience.

cOMMon: A business system which is available to all in Volvo CE. It has two facets; one is the ability to document common processes down to a certain level across the board and the second is the ability to attach an operational management manual to these processes.

Culture: The accumulated effect of the employees' norms, values, attitudes, and opinions. This is a component in the Organizational Capital.

Data: Observations, numbers and facts without a proper interpretation.

EFFAS: The European Federation of Financial Analysts Societies (EFFAS) was founded 1962 as an umbrella organization at a European level for professional associations working with investments at a national level by having leading experts from Europe's Equity and Fixed Income markets coming together. EFFAS have twenty-five member societies and represents over 16.000 investments professionals. EFFAS work as a European communication platform where individual member societies can communicate and build networks and is a strong associate in the work towards a Europe with a more integrated financial market (effas.net).

Explicit knowledge: Knowledge that is easy to access, share and codify.

EVA: Economic Value Added - the difference between stock and book value.

Human Capital: The accumulated value of companies' employees' competences. Does not belong to a company.

IC Prototype: A visual representation of the managements combined view on what Intellectual Capital are needed in the company in accordance with the strategic intention. It visualizes how the company should use their capital and how value is created in the present and in the future.

Implicit knowledge: Knowledge that is stored in the human mind or in the organizations structure. This knowledge can be accessed by questions and discussions.

InCas: Intellectual Capital Statements for Europe, is a collaboration project that involves leading academic institutes around Europe. InCas purpose is to enlighten the IC concept in order for companies to appreciate the value of their IC as well as for external stakeholders (incas-europe.org).

Information: Data (observations, numbers and facts) placed in a meaningful context.

Innovation Capital: the renewal strengths of a firm and the ability for future growth. This capital includes patents, trade secrets and other intangible assets.

Intellectual Capital: The sum of Human Capital, Organizational Capital and Relational Capital. IC is the capability of a company to create and deliver value in both present and future perspectives.

Knowledge: "Knowledge is that which we come to believe and value based on the meaningfully organized accumulation of information (messages) through experience, communication and inference" (Issa Shehabat et al, 2009, p.160)

Organizational Capital: Defined as "What is left in the building when the employee goes home and is not part of the balance report" (Roos et al, 2006, p.36). This can be the company infrastructure, processes, systems, culture etcetera.

Process: "A process is a structured set of activities designed to accomplish a defined objective" (Van Bon et al, 2007, p.17).

Relational Capital: The accumulated value of all relationship a company has with its' stakeholders, such as networks, customer relationships, partners and teamplying. This can be partly owned by the company and partly by the employee.

Structural Capital: The parts of Organizational Capital and Relational Capital that stays in the building when the employees – Human Capital – go home.

Tacit knowledge: Knowledge that is subconsciously understood and applied. It is difficult to articulate and formalize.

Teamplace: A part of Volvo CE's internal network. Functions as a webpage where information can be stored.

Transformation: The increasing of value that is created in the interaction between the IC components.

Tree of Distinction: A model used to make a company's intellectual capital visible by enlighten the key components that is needed to reach the strategic objectives.