

Importance of intangible resources in competitive advantage and strategy

Santtu Korpinen

Master's Thesis
Degree Programme in International
Business Management
2.12.2014



Authors Santtu Korpinen	Group
Title Importance of intangible resources in competitive advantage and strategy	Number of pages and appendices 80 + 5
Supervisors Maria Jakubik	
<p>The objective of the study is to show the existence and importance of intangible resources in competitive advantage and strategy, even in product oriented business. One intention is to study if these intangible resources exist and if their ratio to the tangible resources is significant enough to be a source of competitive advantage. Another intension is to extent the role of intangible resources all the way to strategic decisions. The study concentrates on answering these questions in the scope of a single customer project in the Data Communication Networks –business segment of Fibox Oy. Outcomes of the project are plastic injection molding molds and molded plastic products for a specific customer project. The project is managed by Fibox Oy and sold by Fibox Plastic & Aluminium Mechanics Oy. The value network of the project expands to include participants from five countries with different segments of expertise.</p> <p>The theoretical framework was based on the definition of strategy by Porter, Hamel and Marides, leading to the different views on the source of competitive advantage according to Porter, Barney and Curado. The study concentrates on the knowledge based view and looks into intellectual capital as a source of sustained competitive advantage. The mapping of the tangible and intangible resources is based on the work of Allee.</p> <p>The study was conducted in the form of participant observation, as the researcher is part of the organization and the phenomena being studied. Data were gathered by primary observations via value network modeling and analyzed with value network analysis. The analytical approach was qualitative.</p> <p>The findings revealed that these intangible resources do exists and they are exchanged in the value network. The results also suggested that the role of these exchanges is significant enough for them to be a source of sustained competitive advantage if recognized, managed and utilized correctly. In addition the conceptual framework suggests that these intangibles should also be part of the strategic planning.</p> <p>In conclusion the study argues that understanding the relationships of strategy, competitive advantages and intellectual capital is an obligation and privilege of everyone in an organization nowadays. It is also recommend that everyone should view themselves as a participant in a value network and think about at least the most important participants to them and think about the quality of their deliverables and demand quality from the deliverables they receive.</p>	
Key words corporate strategy, competitive advantage, intellectual capital, value networks, intangibles, knowledge based view	

Tekijä Santtu Korpinen	Ryhmä
Aihe Aineettomien resurssien tärkeä rooli kilpailuedun saavuttamisessa ja osana strategiaa	Sivumäärä ja liitteet 80 + 5
Ohjaaja Maria Jakubik	
<p>Tutkimuksen tavoite on lisätä tietoisuutta aineettomien resurssien olemassa olost ja niiden tärkeydestä kilpailuedun saavuttamisessa sekä osana strategiaa myös tuotelähtöisessä liiketoiminnassa. Tarkoituksena on selvittää aineettomien resurssien olemassa oloa ja tutkia, onko niiden suhde aineellisiin resursseihin verrattuna riittävän suuri, jotta niillä on vaikutusta kilpailuedun saavuttamisessa. Tämän lisäksi syvennyttään aineettomien resurssien rooliin osana strategiaa. Tutkimuksen alueeksi on valittu yksittäinen asiakasprojekti Fibox Oy Ab:n Data Communication Networks -liiketoimintasegmentistä. Projektin lopputuloksena syntyy asiakaskohtaisia ruiskupuristusmuotteja sekä muovipuristeita. Projektia hallinnoi Fibox Oy Ab ja tuotannosta vastaa Fibox Plastic & Aluminium Mechanics Oy Ab. Projektin arvoverkosto sisältää osallistujia viidestä eri maasta sekä usealta eri osaamisalueelta.</p> <p>Tutkimuksen teoreettinen osio alkaa keskustelulla strategian määritelmästä perustuen Porterin, Hamelin ja Marideksen näkemyksiin, jatkuen Porterin, Barney'n ja Curadon eri näkemyksiin kilpailuedun lähteestä. Tutkimus keskittyy näkemykseen tiedon ja kokemuksen tärkeydestä ja tutkii aineettoman pääoman roolia kestävän kilpailuedun saavuttamisessa. Aineellisten ja aineettomien resurssien kartoittaminen perustuu Alleen arvoverkosto-käsitteeseen.</p> <p>Koska tutkija oli jo osa tutkittavaa organisaatiota ja ilmiötä, empiirinen tutkimus suoritettiin käyttäen osallistuvaa havainnointia. Tarvittava tieto kerättiin arvoverkoston kartoittamisella ja jäsenettiin arvoverkostoa analysoimalla. Menetelmäsuuntaus oli laadullinen tutkimus.</p> <p>Tutkimuksen pohjalta voidaan osoittaa aineettomien resurssien olemassa olo ja se, että näitä vaihdetaan arvoverkoston osallistujien välillä. Näiden resurssien vaihdon rooli osana arvoverkostoa on merkittävä, ja jos nämä aineettomat resurssit tunnustetaan ja niitä hallitaan sekä hyödynnetään oikein, ne voivat toimia osana kestävän kilpailuedun saavuttamista. Tämän lisäksi tutkimuksen teoreettinen viitekehys osoittaa, että näiden aineettomien resurssien tulisi olla osana strategista suunnittelua.</p> <p>Päätelmänä tutkimus esittää, että yhteyden ymmärtäminen strategian, kilpailuedun ja aineettoman pääoman välillä on tänä päivänä jokaisen työntekijän oikeus ja velvollisuus. Tutkimus esittää myös, että jokaisen työntekijän tulisi tunnustaa itsensä ja kollegansa osana arvoverkkoja ja varmistaa omien syötteidensä laatu sekä vaatia laadukkaita syötteitä arvoverkkojen muilta jäseniltä.</p>	
Avainsanat strategia, kilpailuetu, aineeton pääoma, arvoverkko, aineettomat resurssit	

Table of contents

1	Introduction	1
1.1	Purpose statement.....	2
1.2	Research problem and needs.....	3
1.3	Research questions.....	3
1.4	Scope of the study.....	3
1.5	Structure of the study	4
2	Literature review	6
2.1	Corporate strategies	6
2.1.1	What is strategy?	7
2.1.2	The search for strategy	11
2.1.3	What is strategy and how do you know if you have one?	14
2.1.4	Summary.....	17
2.2	Competitive advantage	18
2.2.1	Porter’s five forces	18
2.2.2	Resource-based view.....	24
2.2.3	Knowledge based view	27
2.2.4	Summary	31
2.3	Intellectual capital.....	32
2.3.1	Human capital.....	37
2.3.2	Organizational capital	38
2.3.3	Relational capital.....	39
2.3.4	Summary	42
2.4	Knowledge management, future of knowledge and value networks.....	42
2.4.1	The future of knowledge.....	43
2.4.2	Value networks	58
2.4.3	Summary	62
2.5	Conceptual framework.....	62
3	Research approach	64

3.1	Research philosophy (worldview).....	64
3.1.1	Ontology.....	65
3.1.2	Epistemology.....	66
3.2	Research design.....	66
3.3	Research methods.....	67
3.3.1	Data collection.....	67
3.3.2	Data analysis.....	68
3.3.3	Validity and reliability.....	69
4	Findings and discussion.....	70
4.1	Value network modeling.....	70
4.2	Value network analysis.....	73
4.3	Value network and the conceptual framework.....	76
4.4	Value network and the research questions.....	77
5	Conclusions and recommendations.....	78
	Bibliography.....	81
	Appendix 1: Value network modeling.....	83
	Appendix 2: List of figures.....	86
	Appendix 3: List of tables.....	87

1 Introduction

The field of this study is enclosure business and enclosing solutions for protecting fiber optics and data communication applications. Fibox is a privately owned international Finnish company. Its core business is to manufacture plastic enclosures with injection molding and offer solutions based on these enclosures. Fibox employs about 650 people worldwide in 15 locations, experts in design, injection molding, enclosure solutions and sales in different industry segments. Fibox has more than 40 years of experience with enclosures.

Because of the technical nature of manufacturing processes and the solutions the company offers to the customers, the business tends to be very product oriented. This means that the thinking inside the organization is mainly product oriented. The purpose of the study is to explore “if an old dog can use its old tricks in a new situation” i.e. if Fibox is able to use its current competitive advantages also in the future. Are the 40 years of technical leadership, strong core capabilities and employee’s application and technical competences nowadays more a burden than a benefit in the current business environment? Does the company need to learn all new tricks to be more market driven and keep its competitive advantages? Or can it utilize its existing core capabilities and intellectual capital to be more market driven? Can the organization learn to love its products less so that the customers can love their solutions more?

Fibox is not the only product oriented organization facing challenges because tangible resources are nowadays easy to copy and their value is declining. If the tangible resources are losing their value and the competition can produce more or less similar products, is not the company in trouble? Has the organization a need to learn new tricks to survive?

The study explores the possibility that even an established organization (and especially an established organization) has more in its sleeve than its currently utilizing. Is the burden of loving your products truly a burden? Or is that love full of knowledge, strong capabilities and human competence? Aren’t knowledge, capabilities and competences as intangible assets those resources that are so important in the business environment nowadays? Aren’t those intangibles resources what make companies grow from good to great?

The study will look into this inside the Data Communication Networks –business segment, with the specific customer project. Would value network analysis help the business segment to better understand the different resources available? Would the analyses be able to point out

the not so visible intangible resources? Would looking into the intellectual capital and especially the human capital give the segment a better understanding of the individual competences on hand? Would knowledge management's tools allow the segment to manage and utilize these 'invisible' resources internally and externally? Would that mean that the Data Communication Networks –business segment could utilize the existing core capabilities and intellectual capital to be more market driven and improve its competitive advantages? These are the questions this study seeks to answer.

Fibox is operating internationally, so the value network studied is also operating in international level. The focus of the study is the Data Communication Networks –business segment of Fibox and the scope of the research is a single customer project.

It will be studied if Fibox should expand the scope from product management more towards solution ecosystem management. Principles of corporate strategy, competitive advantage and intellectual capital with value network analyses are used to raise the awareness of the importance of intangible resources and exchanges. The role of these intangibles is discussed in chapter 4 (Findings and discussion). The conclusions and recommendations chapter (chapter 5) looks into the shift from product management more towards solution ecosystem management.

1.1 Purpose statement

The central phenomenon explored in the study is competitive advantage. The intent is to raise the awareness of the importance of the intangible resources in the competitive advantage for the Data Communication Networks –business segment. This is closely related to the concept of solution ecosystem management.

The focus is on the tangible and intangible resources in the value networks of a typical FTTX enclosure customer project in the Data Communication Networks - business segment. The central phenomenon can be understood with the support of the literature review and conceptual framework and finally by the value networks analyses of the customer project.

This phenomenon has not been studied in this organization before and because of this there is a need to explore and describe the phenomenon to find out if there is a reason for future study (chapter 5). The study is a qualitative research. (Creswell 2014, loc 2809). The research approach will be explained in chapter 3.

1.2 Research problem and needs

Fibox in general, and in the scope of this study (the Data Communication Networks –business segment), is losing competitive advantage because its core tangible resources are losing their value. Tangible resources like injection molding machines, molds and standard products. These tangible resources are losing their value because they are becoming more and more homogeneous and mobile (easy to copy).

Research is needed to better understand competitive advantage and the source of it. If the old source of competitive advantage is losing its value can the company find other sources of competitive advantage? Are there existing resources that are valuable, rare, costly to imitate and exploited by the organization i.e. are they a source of sustained competitive advantage?

What is the relationship between competitive advantage and corporate strategy? How the overall corporate strategy should react to the claim that core tangible resources are losing their value? What is the role of strategy in business nowadays? What is strategy?

What are the intangible resources discussed in literature? Do they exist in Fibox? What are they like? Where can one find them? Can they be a source of sustained competitive advantage?

1.3 Research questions

1. What is the ratio of tangible and intangible resources in the value network of a typical customer project in the Data Communication Networks – business segment?
2. Why is the role of the intangible resources in these value networks so important and even more important in the future?
3. How can these intangible resources be used to gain competitive advantage in this industry?

1.4 Scope of the study

The study concentrates on answering the research questions in the scope of a single customer project in the Data Communication Networks –business segment. Other Fibox business is excluded from this study and more research is needed to see if these findings are applicable outside of this scope.

Value network analyses will concentrate on the qualitative deliverables inside the value network. The quantitative deliverables are of course important, but because of their size and depth they are not part of this study.

Intellectual capital, knowledge management and HR are related to the field of study and are discussed in the literature review as a back ground for the value network analyses. But because of the size and depth of the subject; HR, cultural aspects etc. are also subjects of further study.

1.5 Structure of the study

The purpose statement, research problem and questions and also the scope and structure of the study were presented in the introduction.

Without strategy there is no reason to search for competitive advantage, no need to use intellectual capital to gain competitive advantage, no need for knowledge management and no need for tools like value network analysis to map the value network and knowledge. No reason for this study. For this reason the literature review in chapter 2.1 looks into the fundamental basics of corporate strategy that is “A crucial business decision that still manages to create much confusion” (Marides 2004, 5).

Strategy attempts to archive sustainable competitive advantage (Porter 2011, 1-2). In chapter 2.2 literature review introduces the three dominant views to competitive advantages; Porter’s five forces, resource based view and its extension knowledge based view.

From these three dominant views the study leans towards the knowledge based view and sees intellectual capital (chapter 2.3) and knowledge management (chapter 2.4) important to the sustainable competitive advantage.

The conceptual framework will guide the research process and support the answering of the research questions. It will also combine the theoretical and empirical parts of the paper together. Conceptual framework is introduced in chapter 2.5.

The research approach is a combination of the research philosophy, the research design and the research method. These are discussed in chapter 3.

Findings and discussion (chapter 4) will take the concepts (especially the value networks from chapter 2.4) into action and the value network of the customer project in the scope is modeled and analyzed.

Chapter 5 'conclusions and recommendations' will summarize the study and recommend further actions based on the findings from chapter 4.

2 Literature review

Literature review will study corporate strategies, competitive advantage, intellectual capital and knowledge management through value networks to form the backbone of the study. Conceptual framework is also based on this review.

2.1 Corporate strategies

“You have to know the past to understand the present” –Carl Sagan

The evolution of corporation strategies is relatively short. It was not until the 1950s that the amount of information about the company and its environment started to require formal planning procedures. This type of formal planning was usually done for budgeting purposes by simple extrapolation and cannot be considered as strategy. (Kay 1993, 340.)

Through the early 1950s the study of business history was the study of individual business people and firms. The first competency identified was the general management capability. Explanations of the growth and success of firms were biographies of those who created and managed those firms. (Barney & Clark 2007, 5-6.)

In the 1960s planning goes beyond forecasting when companies started to look into a variety of possible outcomes for the future as scenario planning. For example Shell started to formulate strategic alternatives for the future scenarios. (Kay 1993, 341.) The planners of the 1960s and 1970s were concerned with the market environment, the product portfolio and the product life cycle. But they still tended to underestimate the role of competition. (Kay 1993, 345.)

Porter's 'five forces' framework offered a more comprehensive checklist of environmental factors and by early 1980s competitor analysis had often supplemented the environmental analysis (Kay 1993, 345). The 1980s was in many ways the turning point for corporate strategies. Corporations moved away from the business portfolios and focused on the core business (Kay 1993, 346.) Porter's theory of competitive advantage is based on a firm's product market position (Barney & Clark 2007, 14.) Wernerfelt published his article 'A Resource-Based View of the Firm' in 1984, looking into the same problem of competitive advantage from the resource-based view (Barney & Clark 2007, 14.)

In 1990s companies started to formulate statements of company objectives in ‘mission statements’ and asking themselves -what sort of business are we in? Attention was also moving to issues of strategy implementation. (Kay 1993, 350.)

But Makides (2004, 5) is still asking what is strategy and how do you know if you have one? He goes as far as to argue “Nobody really knows what strategy is” (Makides 2004, 5). In next chapters the paper will look into how Michael Porter (2011) answers the question “What is strategy” in his paper from 1996, what Gary Hamel finds with his search for strategy (Hamel 1997) and how Costas Markides (Markides 2004) summarizes these two papers.

2.1.1 What is strategy?

Porter starts by clarifying that operational effectiveness is not same as strategy. Today’s dynamic markets and changing technologies allows rivals to copy market positions and competitive advantages quickly so positioning only is not enough for strategy. The root of the problem is the failure to distinguish between operational effectiveness and strategy. Operational effectiveness means performing similar activities better than rivals. In contrast strategic positioning attempts to archive sustainable competitive advantage by performing different activities or performing similar activities in different ways than rivals. (Porter 2011, 1-2)

Porter finds three key principles for strategic positioning, strategy is the creation of a unique and valuable position, involving a different set of activities, strategy requires you to make trade-offs in competing (to choose what not to do) and strategy involves creating “fit” among a company’s activities. By “fit” Porter means the ways a company’s activities interact and reinforce one another. When activities mutually reinforce each other, competitors can’t easily imitate them. (Porter 2011, 3-4)

Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value. Otherwise, a strategy is nothing more than marketing slogan that will not withstand competition. What turns this marketing concept into a strategic positioning is the tailored set of activities that make it work. (Porter 2011, 8-9)

Strategic positions emerge from three distinct sources, which are not mutually exclusive and often overlap. **Variety-based positioning** is based on the choice of product or service varieties rather than customer segments. A variety-based positioning can serve a wide array of customers, but for most it will meet only a subset of their needs. **Needs-based positioning** is

that of serving most or all the needs of a particular group of customers. (Porter 2011, 11-12) The third basis for positioning is that of segmenting customers who are accessible in different ways. Access can be a function of customer geography or customer scale, anything that requires a different set of activities to reach customers in the best way. Porter calls this **access-based positioning**. (Porter 2011, 14)

Porter (2011, 16) also argues that a sustainable strategic position requires trade-offs. By this Porter means that choosing a unique position is not enough to guarantee a sustainable advantage. Competitor can reposition itself to match the superior performer or imitate it by “straddling”. The straddler seeks to match the benefits of a successful position while maintaining its existing position. Trade-offs creates the need for choice and protect against repositions and straddlers. (Porter 2011, 16-17). Porter finds three reasons for trade-offs. A company known for delivering one kind of value may lack credibility and confuse customers if it delivers another kind of value. Porter calls these inconsistencies in image or reputation. (Porter 2011, 17). Second trade-offs arise from activities themselves. Porter uses Ikea as an example; The more Ikea has configured its activities to lower cost by having its customers do their own assembly and delivery, the less able it is to satisfy customers who require higher levels of service. (Porter 2011, 18). The final set of trade-offs arise from limits on internal coordination and control. Companies that try to be all things to all customers risk confusion with its own employees as they attempt to make day-to-day operating decisions without a clear framework. (Porter 2011, 18). Positioning trade-offs are essential to strategy. They create the need for choice and purposefully limit what company offers. The absence of trade-offs is a dangerous half-truth that managers must unlearn. (Porter 201, 19) The essence of strategy is choosing what not to do. Without trade-offs, there would be no need for choose and no need for strategy. (Porter 2011, 20)

According to Porter (2001, 20) fit drives both competitive advantage and sustainability. By this he means while operational effectiveness is about achieving excellence in individual activities, strategy is about combining activities. (Porter 2011, 20) Porter (2011, 21) argue that the importance of fit among functional policies is one of the oldest ideas in strategy. Fit is important because discrete activities often affect one another (Porter 2011, 21). First-order fit is consistency between each activity and the overall strategy. Consistency ensures that the competitive advantages of activities cumulate and do not erode or cancel themselves out. It makes strategy easier to communicate. (Porter 2011, 21) Second-order fit occurs when activities are reinforcing. As an example Porter uses the combination of two companies marketing activities that reinforce one another, lowering total marketing costs. (Porter 2011, 22) Third-order fit

goes beyond activity reinforcement to what Porter calls optimization of effort. Coordination and information exchange across activities to eliminate redundancy and minimize wasted effort are the most basic types of effort optimization. This includes coordination with suppliers or distribution channels can eliminate the need for some in-house activities. (Porter 2011, 25)

In all three types of fit, the whole matters more than any individual part. Competitive advantage grows out of the entire system of activities. The fit among activities substantially reduce cost or increases differentiation. The competitive value of individual activities cannot be decoupled from the system or strategy. (Porter 2011, 25).

Strategic fit among many activities is fundamental not only to competitive advantage but also to the sustainability of that advantage. It is harder for a rival to match an array of interlocked activities than it is merely to imitate a particular activity. Positions built on systems of activities are far more sustainable than those built on individual activities. The more a company's positioning rest on activity systems with second- and third-order fit, the more sustainable its advantage will be. Such systems are usually difficult to untangle from outside the company and therefore hard to imitate. Competitor seeking to match activity systems gains little by imitating only some activities and not matching the whole. Fit among a company's activities creates pressure and incentives to improve operational effectiveness, which makes imitation even harder. When activities complement one another, rivals will get little benefit from imitation unless they successfully match the whole system. Seeing strategy in terms of activity systems makes it clearer why organizational structure, systems and processes need to be strategy-specific. (Porter 2011, 27).

What is strategy? Strategy is creating fit among company's activities. The success of strategy depends on doing many things well and integrating among them. If there is no fit among activities, there is no distinctive strategy and little sustainability. (Porter 2011, 27). Why do so many companies fail to have a strategy? Managers have become confused about the necessity of making choices. (Porter 2011, 28)

Porter list the following sustainable competitive advantages (Porter 2011, 29): Unique competitive position for the company, activities tailored to strategy, clear trade-offs and choice in relation to competitors, competitive advantages arises from fit across activities, sustainability comes from the activity system (not the parts), operational effectiveness is a given.

According to Porter (2011, 29) many managers simply do not understand the need to have a strategy, the pursuit of operational effectiveness is seductive because it is concrete and actionable.

Porter (2011, 29-30) believes that most companies owe their initial success to a unique strategic position involving clear trade-offs. The passage of time and the pressures of growth led to compromises that were, at first, almost imperceptible. Companies have compromised their way to homogeneity with their rivals and lose their clear competitive position. Typically, the company has matched many of its competitors' offerings and practices and attempts to sell to most customer groups. (Porter 2011, 30)

Porter encourages companies to reconnecting with their strategy by a careful look at what the company already does and what is its core of uniqueness. This can be identified by answering the following questions: Which of our products or service varieties are the most distinctive? Which of our products or service varieties are the most profitable? Which of our customers are the most satisfied? Which of our customers, channels or purchase occasions are the most profitable? And which of the activities in our value chain are the most different and effective? The next challenge is to refocus on the unique core and realign the company's activities with it. (Porter 2011, 30)

A company's history can also be instructive. Looking backward, one can reexamine the original strategy to see if it is still valid? Can the historical positioning be implemented in a modern way, one consistent with today's technologies and practices? (Porter 2011, 30).

Organizational realities also work against strategy. Trade-offs are frightening and making no choice is sometimes preferred to risking blame for a bad choice. Companies imitate one another, each assuming rivals know something they don't. The failure to choose sometimes comes down to the reluctance to disappoint value managers or employees. (Porter 2011, 30).

The desire to grow has perhaps the most perverse effect on strategy. Trade-offs and limits appear to constrain growth. Managers are tempted to take incremental steps that surpass those limits but blur a company's strategic position. Managers are unable to make choices, so the company embraces on a new round of broadening and compromises. Too often efforts to grow blur uniqueness, create compromises, reduce fit and ultimately undermine competitive advantage. (Porter 2011, 30-32)

With so many forces at work against making choices and tradeoff, a clear intellectual framework to guide strategy is a necessary counterweight. Moreover, strong leaders willing to make choices are essential. (Porter 2011, 34) Porter (2011, 34) argue that in many companies leadership has degenerated into orchestrating operational improvements and making deals. General Manager is more than the stewardship of individual functions. Its core is strategy: defining and communicating the company's unique position, making trade-offs and forging fit among activities. The leader must provide the discipline to decide which industry changes and customer needs, the company will respond to, while avoiding organizational distractions and maintaining the company's distinctiveness. One of the leader's job is to teach others in the organization about strategy, setting limits is another. Deciding which target group of customers, varieties and needs the company should serve is fundamental to developing a strategy. Improving operational effectiveness is a necessary part of management, but it is not stately. Managers must clearly distinguish operational effectiveness from strategy, the two agendas are different. The operational agenda is the proper place for constant change, flexibility and relentless efforts to archive best practice. In contrast the strategic agenda is the right place for defining a unique position, making clear trade-offs and tightening fit. (Porter 2011, 34-35).

2.1.2 The search for strategy

On 1997 Gary Hamel stated that "We are on the verge of a phase transition between an old economic order and a new one". Call it the 'digital' economy, the 'knowledge' economy or just the 'new' economy. (Hamel 1997, 1) To capture this new wealth Hamel (1997, 1) argues that what is needed is deep capacity for strategy innovation - an ability to fundamentally reinvent the basic of competition within existing industries and invent entirely new industries. For many companies it will not be enough to reengineer processes; to survive they will also need to reinvent core business models. (Hamel 1997, 1)

According to Hamel (1997, 2) quality, cost, time-to-market, process improvement are important, but we are reaching the point of diminishing returns along some of these improvement trajectories. Hamel (1997, 2) continues "In a discontinuous world, strategy innovation is the key to wealth creation."

Similar to Porter (2011, 30-32) Hamel (1997, 3) see growth as an enemy to strategy. Focusing on growth rather than on strategy innovation is likely to destroy wealth rather than create it (Hamel 1997, 3).

Hamel (1997, 3) is asking: If strategy innovation drives wealth creation, why isn't strategy front and center in most organizations today? Like Porter (Porter 2011, 1-2) Hamel (1997, 3) wants to separate operational improvements from strategy. Hamel (1997, 4) sees that the question "what industry are you in?" is harder and harder to answer. In the past it was relatively easy to tell who was a competitor and who was not. It is increasingly difficult to know where the boundaries of the firm begin and end.

Strategy becomes substantially more complex in a world where the firm doesn't directly control many of the assets critical to its success. (Hamel 1997, 4) The changing context for strategy has provoked a huge amount of new thinking around the content of strategy. The new conceptual themes in the strategy world include: foresight, knowledge, competencies, coalitions, networks, extra-market competition, eco-systems, transformation and renewal. (Hamel 1997, 4)

Hamel (1997, 4) argues that "No one seems to know anything about how to create strategy. Managers today know how to embed quality disciplines, how to re-engineer processes and how to reduce cycle times, but don't know how to create new innovative wealth-creating strategies." "The practice of strategy must be reinvented" (Hamel 1997, 5). Hamel (1997, 5) also argues that we all know strategy as a 'thing' and understand it - once someone else has 'bagged it and tagged it'. Hamel (1997, 5) says that Professor Henry Mintzberg point about the subject is "We understand planning as a process, the problem is that process doesn't produce strategy - it produces plans."

According to Hamel (1997, 5) Albert Einstein has said "there is nothing so practical as a good theory" and continues to point out that without a theory of strategy creation we are helpless to improve our capacity to 'strategize'. Meaning that 'strategizing' is something we can study and learn. Strategizing is not a process; it must be a deeply embedded capability (Hamel 1997, 6). Hamel (1997, 7) goes as far as citing complex systems researcher Stuart Kauffman and uses his idiom "Order without careful crafting". Even though the sentence is from studies of the origin of life on Earth, Hamel (1997, 7) likes to suggest that this is the goal of strategizing. By this Hamel (1997, 7) means that like all forms of complexity, also strategy is poised on the border between perfect order and total chaos, between absolute efficiency and blind experimentation, between autocracy and complete adhococracy. (In chapter 2.4. Allee uses a similar metaphor about organizations)

Despite this nature of strategy or maybe because of it Hamel (1997, 8) would like to raise the idea that maybe we could do something to make the path from insight to strategy much easier. Hamel (1997, 8) asks the question “Is a great strategy luck or is it foresight?”, he also answer the questions himself “Strategy is always the product of lucky foresight”. According to Hamel (1997, 8) strategy is the product of a complex and unexpected interplay between ideas, information, concepts, personalities and desire. The question that Hamel (1997, 8) raises is can we do anything to increase the fertility of the soil where strategy grows? Can we make serendipity happen? Or at least encourage it? Can we prompt emergence? Hamel (1997, 8) thinks we can.

Hamel (1997, 8) finds six preconditions for strategy to emerge. First, new voices: According to Hamel (1997, 8) Companies miss the future not because they are lazy, but because they are blind. Many companies are unequipped to see where the future is coming from (Hamel 1997, 8). Second, new genetic material must be brought into the strategy process, because diversity was a requirement for the development of life, it is also a requirement for the emergence of new strategy. Top management must give up its monopoly on strategy creation. Strategizing also requires voices from the outside of the organization. Hamel (1997, 9)

Third, new conversations: The emergence of strategy depends not only on the diversity of voices, but also on the connection between these voices. Connections that cross the boundaries of function, technology, hierarchy, business and geography. (Hamel 1997, 9) Fourth, new perspectives: One can't raise an individual's IQ, but it is possible to help an individual to see the world from another point of view. This is important because strategy innovation requires new ways of seeing. To increase the probability of strategy innovation, strategist must become the merchants of new perspectives to help companies reconcile themselves, their customers, their competitors and from that their opportunities. (Hamel 1997, 10)

Fifth, new passion: Hamel (1997, 10) feels that we have too often ignored the emotional side of strategy and is interested in the way commitment accumulates around a new strategy. Hamel (1997, 11) asks if we can accelerate the commitment process and thereby reduce the time between strategy insight and action? To do this Hamel (1997, 11) would like to get individuals throughout the organization deeply involved in the process of creating strategy. This would allow a new collective point of view to merge (Hamel 1997, 11). Sixth, Experimentation: Hamel (1997, 11-12) uses the following metaphor: "The end target may be clearly visible 'I want to climb that mountain over there' but the route may be invisible from the starting point. The only way you're going to see the path ahead is to start moving." By this Hamel (1997, 12) means that strategy must be as much about experimentation as it is about foresight, one must

not over-determine strategy; it's dangerous to pretend that we know more than we do about future than we do. It doesn't matter how many gurus, consultants and money a company throws into the question about the future, the answer is still going to be at least partly unclear.

Hamel (1997, 12) see the strategy as adaptive, as a process and loop of foresight -> action -> feedback. The goal is not to develop 'perfect' strategies, but to develop strategies that are directionally correct and then progressively refine the through experimentation and adjustment. (Hamel 1997, 12)

Hamel (1997, 12) finishes his paper by saying we should spend less time working on strategy as a 'thing' and more time working to understand the preconditions which give rise the 'thing'. To rebalance the attention given to context, content and conduct in favor of conduct (Hamel 1997, 12).

2.1.3 What is strategy and how do you know if you have one?

Marides (2004, 5) points out that the fact that Porter and Hamel, two of the most prominent academics in the field of business felt the need to go out of their way and start searching for strategy after 40 years of academic research into the subject goes to show how much confusion we have managed to create regarding such a crucial business decision. Marides (2004, 6) summaries the ideas of both Porter and Hamel and proposes a view of strategy based on his own research. Marides (2004, 6) argues that all successful strategies share same underlying building blocks.

Strategy must decide on a few parameters (Marides 2004, 6). In today's ever-changing environment strategy is all about making some very difficult decisions on a few parameters. It is essential that the firm decides on these parameters because they become the boundaries within which people are given the freedom to operate and try things out. These parameters also define the company's strategic position in its industry. (Marides 2004, 6). "Without clear decisions on these parameters, the company will drift like a rudderless ship in the open seas" (Marides 2004, 6). According to Marides (2004, 6) company has to decide on three main issues: Who will be its targeted customers and who it will not target; What products or services it will offer to its chosen customers and what it will not offer; How it will go about achieving all this - what activities it will perform and what activities it will not perform. This has similarities to what Porter is saying about variety-based positioning, needs-based positioning (Porter 2011, 11-12), access-based positioning (Porter 2011, 14) and about trade-offs (Porter 2011,

16). Marides (2004, 7) continues “Yet, at the end of the day, a firm cannot be everything to everybody” by this he means that clear and explicit decisions must be made. These choices may turn out to be wrong but that is not an excuse for not deciding (Marides 2004, 7). Not only must a company make clear choice on these parameters, it must also attempt to make choices that are different from its competitors. A company will be successful if it chooses a distinctive strategic position. (Merides 2004, 7)

No matter how the ideas are conceived, it’s unlikely that they will be perfect from the start. The firm must be ready to modify or change its strategy as it receives feedback from the market. (Marides 2004, 7). These are similar ideas to Hamel (1997, 12). Marides (2004, 7) challenges companies to use the following tactics in their idea-generation stage: Encourage everyone in the organization to look into the question ‘what business are we in?’, create a positive crisis, collect and utilize ideas from everybody (employees, customers, distributors etc.), create variety in the thinking that takes place in formal planning process, institutionalize a culture of innovation. In general, the goal must be to generate as many strategic ideas as possible to have the luxury of choosing (Marides 2004, 8).

But the job of choosing the ideas that the firm will actually pursue must be left to top management. Choosing is difficult and at the time of choosing no-one knows for sure if a particular idea will work or not. Choices have to be made and these choices may turn out to be wrong. However lack of certainty is no excuse for indecision. (Marides 2004, 8). Also Porter (2011, 34) is talking about the importance of making choices. Similarly to Porter’s trade-offs (Porter 2011, 3-4) Marides (2004, 8) states that in addition to choosing what to do a company must also make it clear what not to do.

Similar to Porter (2011, 3-4) Marides (2004, 9) states that choosing what to do and what not to do is important, but strategy is more than this. Strategy is all about combing these choices into a system that creates the requisite fit between what the environment needs and what the company does (Marides 2004, 9). Marides (2004, 9) phrases it as “strategy must put all our choices together to create a reinforcing mosaic”.

Marides (2004, 9) states that the importance of conceptualizing the company as a combination of activities cannot be overemphasized. This is similar to what Porter (2011, 3-4) is saying about the ways a company’s activities interact and reinforce one another and that strategy is about combining activities (Porter 2011, 20). Even if each individual activity is optimally crafted, the whole may still suffer unless we take interdependencies into consideration (Marides

2004, 9). This is similar to what Porter (2011, 27) is saint about the systems of activities versus individual activities.

According to Marides (2004, 9) the problem is that humans can never comprehend all the complexity embedded in our companies. That's why people focus on one or two aspects of the system and try to optimize these sub-systems independently. By doing so they ignore the interdependencies in the system and are therefore making matters worse (Marides 2004, 9). To avoid this Marides (2004, 9) proposes that when designing company's system of activities, managers must keep four principles in mind: Individual activities must be the ones that are demanded by the market, the activities must fit with each other, in addition to fit the activities must also be in balance with each other, it's important to keep in mind that the collection of these activities will form an interrelated system; the structure of this system will drive behavior in it and if we want to change behavior we'll have to change the structure of the system.

According to Marides (2004, 10) "Strategy must achieve fit without losing flexibility". By that he means that if a company doesn't react to the changes taking place in its environment, it will find itself boiled to death. To avoid this company needs to create fit with its environment while remaining flexible enough to respond to chances in this environment. (Marides 2004, 10) By 'flexible' Marides (2004, 10) means three things: firm must be able to identify changes in its environment early enough, it must have the cultural readiness to embrace change and respond to it and it must have the skills and competencies to compete in whatever environment emerges after the change. Flexibility = being willing to change and being able to change (Marides 2004, 10).

Any strategy needs to be implemented properly. Implementation takes place within an organizational environment created by the management. The environment must promote and support the chosen strategy. (Marides 2004, 10) By environment Marides (2004, 10) means four elements: organization's culture, incentives, structure and people. Marides (2004, 10) continues by saying that a company that wants to put a strategy into action must ask the question 'what kind of culture, incentives, structure and people we need to implement the strategy?'

Marides (2004, 11) reminds that "no position will remain unique or attractive forever". Not only do attractive positions get imitated, also new strategic positions keep emerging, with new 'who', new 'what' and new 'how. New strategic positions (new who-what-how combinations) merge around us all the time. Therefore, company must never settle for what it has. Marides (2004, 11) Similar to Porter (Margetta 2012, loc 26, loc 403) Marides (2004, 11) states that one

should not try to be better but different from competition. Unfortunately according to Marides (2004, 11) existing companies are often weighed down by structural and cultural inertia, internal politics, complacency, fear of cannibalizing existing products, fear of losing existing competencies, satisfaction with the status quo and general lack of incentives to abandon a certain present for an uncertain future, instead of playing a different game from the competitors. The challenge is that a company needs to continuously question the way it operates in its current position while still fighting in this current position (Marides 2004, 12).

2.1.4 Summary

Marides (2004, 5) points out that the fact that Porter and Hamel, two of the most prominent academics in the field of business felt the need to go out of their way and start searching for strategy after 40 years of academic research into the subject goes to show how much confusion we have managed to create regarding such a crucial business decision. To clear this confusion and to raise the importance of this crucial business decision, strategy and understanding the importance of strategy are key points also in this study.

Porter clarifies that operational effectiveness is not same as strategy. Today's dynamic markets and changing technologies allows rivals to copy market positions and competitive advantages quickly so positioning only is not enough for strategy. Like Porter (Porter 2011, 1-2) Hamel (1997, 3) wants to separate operational improvements from strategy. Hamel (1997, 4) sees that the question "what industry are you in?" is harder and harder to answer. According to Marides (2004, 6) company has to decide on three main issues: Who will be its targeted customers and who it will not target; What products or services it will offer to its chosen customers and what it will not offer; How it will go about achieving all this - what activities it will perform and what activities it will not perform. The goal of the study is to understand the intangible exchanges and to understand what we are truly selling to our customers, to answer the questions raised by the literature.

Corporate strategy is the first layer of the conceptual framework 'onion' (chapter 2.5). Strategy ties together all the other layers and without strategy all the other layers are useless or at least they are not fully utilized.

2.2 Competitive advantage

Porter's five forces (also called the 'market power explanation') and the resource based view (efficiency explanation) can be considered to be the current competitive advantage theories and even though they have some similarities, they are considered to be competing theories.

Next the basics and differences of both Porter's five forces and the resource based view will be discussed. In addition to this the resource based view will be expanded to the knowledge based view to match the present economic context more adequately (Curado 2006, 1.) The goal is to study how these theories define and pursue the competitive advantage and how this has changed over the years.

This chapter builds naturally on the topics from the previous chapter about corporate strategies and is combined together with them in the conceptual framework (chapter 2.5)

2.2.1 Porter's five forces

According to both Magretta (2012, loc 51) and Barney & Clark (2007, 3.) the single biggest and most consequential question in business is 'Why are some companies more profitable than others' or in other words 'Why do some firms persistently outperform others'.

A more strategic form of the same question is "How an organization, faced with competition, will achieve superior performance" (Magretta 2012, loc 231.) Barney & Clark (2007, 24.) frames the same concept as "An enterprise has a competitive advantage if it is able to create more economic value than the marginal competitor in its product market". Both competing theories raise competition into a large role in the strategy. If there were no competition, there would be no need for strategy (Magretta 2012, loc 274.)

In Porter's definition competition focuses more on meeting customer needs than on demolishing the rivals. One should not compete to be best. In business multiple winners can coexist. (Magretta 2012, loc 296.) If all companies are heading to the same place i.e. competing to be the best, it will be difficult to stay in the lead for long. For Porter strategic competition means choosing a path different from the others -compete to be unique-. (Magretta 2012, loc 403.) "Competing to be the best feeds on imitation. However, competing to be unique thrives on innovation." (Magretta 2012, loc 431.)

BE THE BEST	BE UNIQUE
Be number 1	Earn higher returns
Focus on market share	Focus on profits
Serve "best" customers with "best" products	Meet diverse needs of target customers
Compete by imitation	Compete by innovation
ZERO SUM A race that no one can win	POSITIVE SUM Multiple winners, many events

Table 1. The right mind-set for competition (Magretta 2012, loc 445.)

Porter's idea is to compete for profits, not to beat your rivals, not to win a single sale. Companies strive for profits not only with their existing rivals, but also with their customers, suppliers, producers and potential rivals.

According to Porter these five forces: The intensity of rivalry among existing competitors, the bargaining power of buyers, the bargaining power of suppliers, the threat of substitute, the threat of new entrants determine the industry's structure. (Magretta 2012, loc 478.) The collective strength of these forces determines the ultimate profit potential of an industry (Porter 1979, 2).



Figure 1. The five forces that shape industry competition. (Harvard Business Review, 2011, loc 819.)

New entrants to an industry bring new capacity, the desire to gain market share and often substantial resources (Porter 1979, 3). According to Porter (1979, 3) there are six major sources of barriers to entry: Economies of scale, product differentiation, capital requirements, cost disad-

vantages independent of size (learning curve and experience curve), access to distribution channels and government policy. Suppliers can exert bargaining power on participants in an industry by raising prices or reducing the quality of goods and services and customers likewise can force down prices, demand higher quality and play competitors against each other (Porter 1979, 5). Substitute products or services limit the potential of an industry by placing a ceiling on prices, unless the industry can upgrade the quality of the product or differentiate it somehow (Porter 1979, 7.) Intense rivalry among the existing competitors is related to the presence of a number of factors: Competitors are numerous or are roughly the same size and power, industry growth is slow, the product or service lacks differentiation or switching costs, fixed costs are high, capacity is augmented in large increments, exit barriers are high and rivals have different idea about how to compete and continually run head-on into each other (Porter 1979, 7-8).

These five forces are at work in all industries despite how different the industries may appear on the surface. The same five forces apply, but their relative strength and importance may differ. The industry structure shaped by these five forces determines the profitability of the industry. This industry structure, once stabilized, tends to be quite stable. Structural change and average profitability of an industry takes a long time to change. (Magretta 2012, loc 498.)

As mentioned before, strategy explains how an organization, faced with competition, will achieve superior performance. “The five forces framework explains the industry’s average prices and cost, and therefore the average industry profitability you are trying to beat” (Magretta 2012, loc 506.)

Each of the five forces has a clear relationship to industry profitability, the more powerful the force, the more pressure it will put on price, cost or both and therefore the less attractive the industry will be. Five forces analysis answers the question ‘What’s going on in your industry?’ and according to Magretta (2012, loc 509) does it much better than SWOT. Once having assessed the forces affecting competition and their causes, the corporate strategist can identify the company’s strengths and weaknesses (Porter 1979, 8). Five forces analysis highlights how external forces create or constrain strategic opportunities for your company. Competition is about the struggle for profits and the question is who gets to capture the value the industry creates. With very simple mathematics $\text{price} - \text{cost} = \text{profit}$. (Magretta 2012, loc 509-530.)



Figure 2. How the five forces impact profitability (Magretta 2012, loc 725.)

Porter's five forces approach to gain superior economic performance is clearly focused on external forces. According to Magretta (2012, loc 543) Porter's approach is to force you to think clearly about your industry's structure. "By definition, any successful company has positioned itself favorably in relation to the forces that matter most in its industry" (Magretta 2012, loc 542.)

According to Magretta (2012, loc 697) there are a limited number of structural forces at work in every industry that systematically impact profitability in a predictable direction:

- "If rivalry is intense, companies compete away the value they create, passing it on to buyers in lower prices or dissipating it in higher cost of competing" (Magretta 2012, loc 666.)
- "Powerful buyers will force prices down or demand more value in the product, thus capturing more of the value for themselves" (Magretta 2012, loc 548.)
- "Powerful suppliers will charge higher prices or insist on more favorable terms, lowering industry profitability" (Magretta 2012, loc 575.)
- "Substitutes -products or services that meet the same basic needs as the industry's product in a different way- put a cap on industry profitability" (Magretta 2012, loc 608.)
- "Entry barriers protect an industry from newcomers who would add new capacity" (Magretta 2012, loc 634.)

THE FORCE		IMPACT		WHY			
IF threat of entry	↑	Profitability	↓	Because	(Prices ↓ Costs)	↑	
IF supplier power	↑	Profitability	↓	Because	(Costs ↑)		
IF buyer power	↑	Profitability	↓	Because	(Prices ↓ Costs)	↑	
IF substitutes	↑	Profitability	↓	Because	(Prices ↓ Costs)	↑	
IF rivalry	↑	Profitability	↓	Because	(Prices ↓ Costs)	↑	

Figure 3. The relative strength of the five forces and the industry’s profit potential (Magretta 2012, loc 538.)

Five forces analysis is used to determine the attractiveness of an industry to decide whether to exit, enter or invest in an industry. A good five forces analysis allows seeing through the complexity of competition and to the possible actions one can take to improve performance. Porter writes “Strategy can be viewed as building defenses against the competitive forces or finding a position in the industry where the forces are weakest”. (Magretta 2012, loc 762-791.)

Five forces look into the industry structure and the analysis focus on the drivers of industry profitability to explain the industry average price and cost (Magretta 2012, loc 900.) But Porter is not about this external view only; he himself argues that industry structure answers the question ‘Why are some companies more profitable than others?’ only partly. Company’s relative position within its industry can account for even more of the difference (Magretta 2012, loc 819.) The value chain effects the relative position of the company and the value chain analysis focuses on the differences in activities to explain the relative price and cost (Magretta 2012, loc 900.)

The value chain is a combination of activities -discrete economic functions or processes- and usually a mix of people, technology, fixed assets, working capital and information (Magretta 2012, loc 977.) In another words “The sequence of activities your company performs to design, produce, sell, deliver and support its products is called the value chain” (Magretta 2012, loc 985.) The value chain is a powerful tool for disassembling a company into its strategically relevant activities in order to focus on the source of competitive advantage, the specific activities that result in higher price or lower costs (Magretta 2012, loc 1002.)

According to Magretta (2012, loc 1164) the complete definition of competitive advantage is: “A difference in relative price or relative cost that arises because of differences in the activities being performed”. Competitive advantage means that the organization has created value for its customers and is able to capture value itself because the positioning it has chosen in its

industry effectively shelters it from the profit-eroding impact of the five forces, that is to say, the organization has found a way to perform better by being different (Magretta 2012, loc 1212.)

ACTIVITIES	Perform SAME activities as rivals, execute better	Perform DIFFERENT activities from rivals
VALUE CREATED	Meet same needs at lower cost	Meet different needs and/or same needs at lower cost
ADVANTAGE	Cost advantage, but hard to sustain	Sustainably higher prices and/or lower costs
COMPETITION	Be the BEST, compete on EXECUTION	Be UNIQUE compete on STRATEGY

Table 2. Competitive advantages arises from the activities in a company’s value chain. (Magretta 2012, loc 1171.)

For Porter competitive strategy is the general principles of creating and sustaining competitive advantage (Magretta 2012, loc 1219.) A competitive strategy within the business unit and not in the overall company. Overall company performance is best understood as the sum of the returns of each of its businesses. (Magretta 2012, loc 892.)

The five tests every good strategy must pass are: A distinctive value proposal, a tailored value chain, trade-offs different from rivals, fit across value chain and continuity over time (Magretta 2012, loc 2104).

Already in the 1960’s Theodore Levitt argued strongly for avoiding the myopia of narrow, product oriented industry definition (Porter 1979, 9). "Management must think of itself not as producing products but as providing customer-creating value satisfactions." (Levitt 1960, 56) "In short, the organization must learn to think of itself not as producing goods or services but as *buying customer*, as doing the things that will make people *want* to do business with It." (Levitt 1960, 56) Michael Porter is also looking “beyond the product”. Porter’s five forces raise competition into a large role in this strategy. So large that according to Magretta (2012, loc 274) "If there were no competition, there would be no need for strategy." Porter’s five forces are: The intensity of rivalry among existing competitors, the bargaining power of buyers, the bargaining power of suppliers, the threat of substitute, the threat of new entrants determine the industry’s structure. (Magretta 2012, loc 478.)

2.2.2 Resource-based view

A competing theory for the Porter's five forces is the Resource-based theory. An efficiency-based explanation of sustained superior company performance (Barney & Clark 2007, v.)

The resource-based theory or resource-based view (RBV) is trying to answer the same question as Porter's five forces 'why do some firms persistently outperform others?' The RBV is trying to answer this question by focusing on the differential ability of some firms to more effectively and efficiently respond to customer needs. (Barney & Clark 2007, 3-4.) The resource-based view, as the name implies, is viewing the same competitive problem from the perspective of the resources a company controls. According to the theory, competition among product market positions held by companies can be understood as competition among resource positions held by companies. (Barney & Clark 2007, 14.)

According to Curado and Bontis (2006, 368) the foundations of the resource based view can be found in the work done by Edith Penrose in 1959, Penrose conceived the firm as an administrative organization and as a collection of productive resources both physical (land, equipment etc.) and human. Differences in firm performance happen when organizations possess valuable resources than others don't have, resources that are particular and unique. (Curado, & Bontis 2006, 368)

The definition of competitive advantage in RBV is similar to Porter's: "An enterprise has a competitive advantage if it is able to create more economic value than the marginal competitor in its product market". (Barney & Clark 2007, 24.) Barney & Clark (2007, 31) and the resource-based theory is quite critical about the Porter's five forces and about implementing product market strategies. They argue, that whether these strategies that create imperfect competitive product markets generates superior performance depends on both the revenue created by these strategies and the total cost of their implementation. They continue that, the total cost of these resources will often equal their value in creating the imperfect product market competition and in this situation, even if the company is able to create an imperfectly competitive product market, it will still not earn superior levels of performance. (Barney & Clark 2007, 32)

As a conclusion they add, simply because companies that compete in imperfect competitive product markets earn economic rents does not necessary imply that companies that adopt

strategies to create these product market imperfections will enjoy such performance (Barney & Clark 2007, 47).

Similar to Porter, the resource based logic emphasizes the importance of sustainability. Barney & Clark (2007, 52) define that a company has a sustained competitive advantage when it is creating more value than the marginal company in its industry and when other companies are unable to duplicate the benefits of this strategy. Barney & Clark (2007, 54) argue that companies, in general cannot obtain sustained competitive advantage when strategic resources are evenly distributed across all competing companies and highly mobile. The conclusion is that search for sources of sustained competitive advantage must focus on heterogeneous and immobile resources performance (Barney & Clark 2007, 54).

Not all resources hold the potential of sustained competitive advantages. To have this potential Barney & Clark (2007, 57) list that the resource must be:

- Valuable enough to be able to exploit opportunities and/or neutralize threats
- Rare among a companies' current and potential competition
- Imperfectly imitable
- Able to be exploited by companies' organizational processes

The relationship between resource heterogeneity and immobility (value, rarity, imitability, organization) and sustained competitive advantage is summarized below:

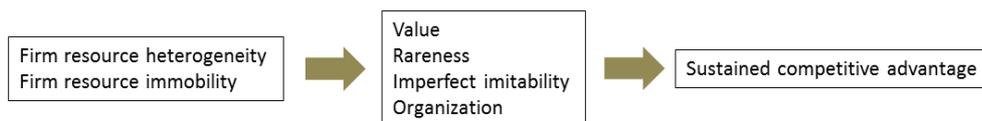


Figure 4. The relationship between resource heterogeneity, immobility and sustained competitive advantage. (Barney & Clark 2007, 69).

The VRIO framework below brings together the questions of value, rarity, imitability and organization to better understand the return potential associated with exploiting any of the company's resources or capabilities.

Is a resource or capability ...					
Valuable?	Rare?	Costly to imitate?	Exploited by organization?	Competitive implications	Economic performance
No	—	—	No	Competitive disadvantage	Below normal
Yes	No	—	↑ ↓	Competitive parity	Normal
Yes	Yes	No		Temporary competitive advantage	Above normal
Yes	Yes	Yes	Yes	Sustained competitive advantage	Above normal

Table 3. The VRIO framework. (Barney & Clark 2007, 70).

Bringing these questions of value (do a firm's resources and capabilities enable the firm to respond to environmental threats or opportunities), rarity (is a resource currently controlled by only a small number of competing firms), imitability (do firms without a resource face a cost disadvantage in obtaining or developing it) and organization (are a firm's other policies and procedures organized to support the exploitation to its valuable, rare and costly to imitate resources) together provides a single framework to understand the return potential associated with exploiting any of a firm's resources or capabilities. (Barney & Clark 2007, 70).

The process of resource accumulation is considered to be a reflection of innovative entrepreneurial activities, profits can only emerge from these activities if resources accumulation cost are inferior to the rents that those resources might actually produce. The choice of the resources is the main mechanism influencing the generation of the economic rent. Organization is a collection of unique competences and capabilities influencing its evolution and its strategic growth options. To acquire resources with heterogeneous productivities the organization should apply a superior capacity to choose resources at the resource markets. (Curado, & Bon-tis 2006, 369)

If a resource or capability is valuable but not rare, exploiting this resource in conceiving and implementing strategies will generate only competitive parity, but failure to exploit them can put a company at a competitive disadvantage. If a resource or capability is valuable and rare but not costly to imitate, exploiting this resource will generate a temporary competitive advantage. Once competing firms observe this competitive advantage, they will be able to acquire or develop the resources needed to implement this strategy through direct duplication or substitution. Between the time a firm gains a competitive advantage and the time that competitive advantage is competed away through imitation, the first moving firm can earn above normal

economic performance. If a resource or capability is valuable, rare and costly to imitate, exploiting this resource will generate a sustained competitive advantage. In this case competing firms face a significant cost disadvantage in directly duplicating a successful firm's resources and capabilities and no easy to duplicate substitutes for these resources exist. (Barney & Clark 2007, 71)

The fourth question is if the resource of capability is exploited by the organization? The question of organization operates as an adjustment factor in the VRIO framework. If a firm has a valuable, rare and costly to imitate resource and capability but fails to organize itself to take full advantage of this resource, some of its potential competitive advantage could be lost. This VRIO framework suggests the kinds of questions that need to be addressed in order to understand whether a particular firm resource is a source of sustained competitive advantage. (Barney & Clark 2007, 72)

Managers are important in this model, for it is managers that are able to understand and describe the economic performance potential of a firm's endowments. So manager can be a firm resource that has the potential for generating sustained competitive advantage. (Barney & Clark 2007, 74) Firms cannot expect to purchase sustained competitive advantages on open markets, rather such advantages must be found in the rare, imperfectly imitable and exploitable resources already controlled by a firm (Barney & Clark 2007, 74).

2.2.3 Knowledge based view

The knowledge based view of the firm is a recent extension of the resource based view (RBV) (Curado & Bontis, 2006, 367) (Curado, 2006, 1). Curaro and Bontis (2006, 367) in addition to Curado (2006, 1) considers knowledge as a special strategic resource that doesn't depreciate in the way traditional economic probative factors do. Research in the field of organizational learning, knowledge management and intellectual capital have gained a strong recognition and representation (Curaro & Bontis 2006, 368). The KBV (knowledge based view) of the firm provides a conceptual lens for a variety of disciplines including human resources, organizational behavior, management information systems and innovation. In addition to that KBV supports intangible asset development. (Curado, & Bontis 2006, 368)

According to Curaro and Bontis (2006, 371) the KBV of the firm considers knowledge as the most important strategic resource and in that sense is an extension of RBV. KBV considers that organizations are heterogeneous entities loaded with knowledge (Curado 2006, 5) In this

context intangible assets are highly valued and considered critical intellectual capital assets (Curado, & Bontis 2006, 371). Curaro and Bontis (2006, 371) and Curaro (2006, 59) continue that the interpretation of the knowledge as a resource establishes the theoretical connection between RBV and KBV.

According to Wiklund and Shepherd (2003, 1307) organizational knowledge is an important bundle of intangible resources that can be the source of a sustainable competitive advantage. Wiklund and Shepherd (2003, 1307) continue that it has been argued that knowledge has the greatest ability of all resources to serve as a source of sustainable differentiation because of immobility and general applicability.

Dagnino (1996, 217) describes rent as a payment for use of a resource, whether it be land, labor, equipment, ideas or money. To early economists rent meant payments for use of land. Ricardo (1821) called it the payment for the 'use of the original and indestructible powers of the soil'. (Dagnino 1996, 217)

Accepting resources as the basic unit of analysis is one of the preconditions to address the contemporary economics of rents applied to strategy analysis (Dagnino 1996, 222). According to Dagnino (1996, 222) Ricardian rents apply at the intra-industry level as they refer to firms' basic heterogeneity. Dagnino (1996, 222) continues that rents accruing to different units of some otherwise homogeneous resource may differ and result in differences of rent over next more valued use, these differences are called Ricardian rents. Heterogeneity implies that firms of varying capabilities are able to compete in the marketplace and at least break even. Firms with superior resources will earn rents in excess of breakeven for the amount of time they don't induce new competition. (Dagnino 1996, 223)

When major innovations appear, their ultimate impact may be uncertain, meaning that it will not be known for some time, at which point it may be too late for older firms with older technologies and skills to compete in new markets requiring these skills. (Dagnino 1996, 231) With Schumpeterian rents (also called entrepreneurial or innovating rents) the discovery of new combinations of resources and uncertainty is the central issue (Dagnino 1996, 231). This uncertainty is normally viewed as entrepreneurial discovery or innovation of new combination of resources or patterns of demand (Dagnino 1996, 232). According to Dagnino (1996, 232) in addition to the above the entrepreneurial innovation must be socially efficient to produce rents. This means it must provide a sufficient increment in value over existing substitute products or technologies to justify the cost of innovation (Dagnino 1996, 232). Finally imped-

iments to the immediate imitative dissipation of the entrepreneurial rents must exist (barriers to mobility) (Dagnino 1996, 232). Schumpeterian rents are possible to firms which have the unique skills, resources and/luck to be the source of revolutionary changes in an industry or which have the unique capability to rapidly adapt to whatever revolutionary changes might occur (Dagnino 1996, 233).

RENTS	PARADIGM	RELEVANT AUTHORS	UNIT OF ANALYSIS
Ricardian	Resource based view	Penrose (1959) Peteraf (1993) Amit & Shoemaker (1993)	Resources
Schumpeterian	Dynamic Capabilities	Rumelt (1987) Prahalad & Hamel (1990) Teece, Pisano & Shuen (1994)	Capabilities, competence, innovation

Table 4. summarizing the differences between Ricardian and Schumpeterian rent creation (Dagnino 1996, 236).

According to Curado (2006, 2) the nature of rents generated in the RBV is Ricardian, this means that the choice of the resource is the main mechanism influencing the generation of the economic rent. A consequence of this Ricardian RBV is that the mechanism for economic rent creation acts before the acquisition of resources. Firm resources can either be physical, human or organizational. Resources can also be tangible or intangible. These resources also include socially complex resources such as interpersonal relationships within firm managers, the firm's culture or its reputation near the suppliers or clients. Physical resources may originate returns over average levels, intangible resources are able to create and sustain competitive advantage for the firm. These intangible resources are found in the organization in the form of tacit knowledge. (Curado 2006, 3) The Ricardian perspective of rent creation adopted by the RBV is challenged by the Schumpeterian perspective of the dynamic capabilities vision (Curado, & Bontis 2006, 372) (Curado 2006, 6). According to Curado, & Bontis (2006, 372) this vision of dynamic capabilities enlightens the importance of an alternative rent creation mechanism they call 'capability building', this capability building is different from resource choosing. Dynamic capabilities have the capacity to reconfigure, redirect, transform, shape and integrate central knowledge, external resources and strategic and complementary assets. They will allow the firm to respond to the challenges presented by the Schumpeterian competitive world, made of competition and imitation, changing fast and pressured by temporal factors. (Curado, & Bontis 2006, 372)

Curado, & Bontis (2006, 372) argue that the economic change of the material based production to information based production created a revaluation of firms and their workers. Curado, & Bontis (2006, 372) find knowledge workers (concept and technology designers & finance and management people) at the core of organization functions. Many firms consider that to act with efficacy in today's economy, it's imperative for them to become a knowledge based organizations (Curado, & Bontis 2006, 372). But Curado, & Bontis (2006, 372) argue that few understand what that means and how to make the changes necessary to achieve it. Curado, & Bontis (2006, 372) describes this as an iceberg where the products and services are only the visible and tangible reality firms present to their clients, but the largest reality that allows firms to produce these products and services is located below the surface of the water, hidden in the intangible assets of the organization and it entails the knowledge of what the firm does, how it is done and why it is done that way. This concept of an iceberg is similar to Steward's ratio of intellectual capital to the value of physical and financial capital in chapter 2.3 and visualized in figure 5. Curado (2006, 9) refers to this as the 'productive process' that transforms knowledge into products and services.

The KBV of the firm is consistent with the approach that organizations are cultural artefacts that learn through activities and adapt over time. Organizational learning allows the firm to acquire, to change and to preserve its organizational capabilities. (Curado, & Bontis 2006, 373). Curado, & Bontis (2006, 373) continues that organizational culture is the stock of knowledge, coded or not, integrated in patterns and recipes of action to be taken before certain situations, organizational routines often make knowledge become tacit and embedded. The tacit, specific and complex knowledge that the organization develops inside generates long lasting advantages because that knowledge is difficult to imitate (Curado 2006, 8). Resources like knowledge, learning capacity, culture, team work and human capital are pointed out to be the ones contributing to the sustained competitive advantage (Curado 2006, 9). Curado (2006, 9) continues that people's capacity is the main intangible resource and human experience might be the foundation of the KBV.

“In an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge” (Nonaka, 2007/1991, 162). Curado, & Bontis (2006, 373) stand by Nonaka and argue that intangible resources present a superior probability to produce competitive advantage, as they are generally rare, socially complex and difficult to imitate. “In creating wealth, knowledge is increasingly taking a front seat to the traditional factors of production, that is, physical and fiscal assets” (Kim & Mauborgne 1999, loc 2)

Organizational learning capabilities are considered to be the most strategically important ones to create and sustain competitive advantage and capacity to learn faster than competitors is considered to be the only sustained competitive advantage. This dynamic capability builds up over time creating barriers to imitability and making it very difficult for other firms to recreate the unique historical evolution. (Curado, & Bontis 2006, 373)

According to Curado, & Bontis (2006, 374) learning organizations absorb internal and external knowledge, combine them with previous knowledge and create new intellectual capital. Curado, & Bontis (2006, 374) continue that these knowledge intensive firms abandon formal structures and achieve coordination through social rewards and internal normative systems, instead of hierarchical control.

To summarize Curado, & Bontis (2006, 375) and Curado (2006, 12) list that KBV presents a Schumpeterian rent creation logic, organizational learning plays a critical role in the sustainability of the competitive advantage, the nature of the most critical resources within the KBV is mainly intangible and dynamic, idiosyncratic intangible assets development through path dependency and causal ambiguity are the basics of the mechanism for economic rent creation in the KBV, the KBV considers a very special resource that doesn't depreciate and can generate increasing returns even when shared.

2.2.4 Summary

The single biggest and most consequential question in business is 'Why are some companies more profitable than others' or in other words 'Why do some firms persistently outperform others' (Magretta 2012, loc 51 and Barney & Clark 2007, 3). Porter's five forces, the resource based view and the knowledge based view are all trying to answer this question.

The three theories though see the source of the competitive advantage differently. Porter's five forces approach's aim to gaining superior economic performance is clearly focused on external forces. (Magretta 2012, loc 543) The resource based view is viewing the same competitive problem from the perspective of the resources a company controls Barney & Clark (2007, 31). The knowledge based view of the firm is a recent extension of the resource based view (Curado & Bontis, 2006, 367) (Curado, 2006, 1). Curaro and Bontis (2006, 367) in addition to Curado (2006, 1) considers knowledge as a special strategic resource that doesn't depreciate in the way traditional economic probative factors do. According to Curaro and Bontis

(2006, 371) the knowledge based view considers knowledge as the most important strategic resource and in that sense is an extension of the resource based.

Competitive advantage is the second layer of the conceptual framework 'onion' (chapter 2.5). Gaining competitive advantage and supporting it with different strategic tools (chapter 2.1) is the most important part of strategy. But if one doesn't know what the source of competitive advantage is, it will not be possible to utilize it. Based on the literature review and especially the knowledge based view, the study is looking into the intellectual capital of the organization as the source of competitive advantage. Without this understanding the intellectual capital in the organization will not be fully utilized.

2.3 Intellectual capital

"Knowledge is more valuable and more powerful than natural resources, big factories, or fat bankrolls" (Steward 2010, loc 183) Steward (2010, loc 188) continues to define intellectual capital as the sum of everything everybody in a company knows that gives it a competitive edge. In another words it is the collaboration, the shared learning, between a company and its customers, which forces a bond between them that brings the customers back again and again (Steward 2010, loc 193). Steward (2010, loc 194) summarizes: "Intellectual capital is intellectual material including knowledge, information, intellectual property and experience that can be put to use to create wealth. It is collective brainpower. It's hard to identify and harder still to deploy effectively. But once you find it and exploit it you win."

Steward (2010, loc 236) argues that old style business organizations don't manage knowledge well, because they weren't designed to, but now business must learn to manage knowledge. Steward (2010, loc 265) boldly states that knowledge has become the single most important factor of production and because of that managing intellectual assets has become the single most important task of business. Steward (2010, loc 278) points out that we still speak of the USA, Japan and Western Europe as the 'industrial world', but that is a misnomer. According to Steward (2010, loc 236) we are all knowledge workers, working for knowledge companies. In the "knowledge age" and in the "economy of the intangible" (Steward 2010, loc 441).

According to Steward (2010, loc 531) it is difficult to track how knowledge changes the economy because knowledge takes so many different forms. Economist call knowledge a 'heterogeneous resource' (Steward 2010, loc 531).

The intellectual component of business has grown and the physical component shrunk (Steward 2010, loc 597). Steward (2010, loc 597) use the microchip as an example: “What makes them valuable? Certainly not their physical component. Chips are made mainly from sand. The value is mainly in the design of the chip. It is the intellectual content, not the physical”. According to Steward (2010, loc 650) economist Brian Arthur describes this as ‘congealed resources’: a lot of material held together by a little bit of knowledge versus ‘congealed knowledge’: a lot of intellectual content in a little bit of physical material. “A low-value product can be made by anyone anywhere. When you have knowledge no one else has access to – that’s dynamite” (Steward 2010, loc 1281).

Steward (2010, loc 1294) points out that one reason organizations don’t know how to manage knowledge is that it almost always comes wrapped in some tangible form. Steward (2010, loc 1294) argues that we rather manage the forms than the substance and that is like “paying more attention to the bottle than to the wine. It’s easier to count the bottles than to describe the wine”. Yet according to Steward (2010, loc 1307) most corporations do exactly that, people who allocate resources get plenty of information about physical and financial assets. Steward (2010, loc 1320) continue with examples: “The chief financial officer can tell you how big the company’s payroll is, but cannot tell you the replacement cost of employees’ skills” and “The human resource director may know how much the company spends on formal training, but doesn’t know how much learning resulted from it”. According to Steward (2010, loc 1332) we focus on the cost (production side), rather than the value created (customer side). Steward (2010, loc 1359) summaries that people can’t see the “brain gain”, the return on their investment.

Steward (2010, loc 1413) calculates that for most organizations the value ratio of intellectual capital to the value of physical and financial capital is between 1:5 to 1:6. Steward (2010, loc 1413) uses the same metaphor of an iceberg as Curado, & Bontis (2006, 372) in chapter 2.2.3: above the surface is the financial and physical resources, beneath, unseen, something much larger, whose importance everyone recognizes but whose contours no one knows.

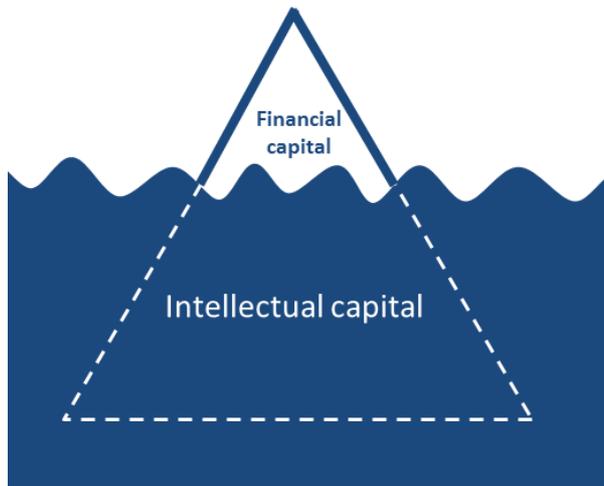


Figure 5. Steward's ratio of intellectual capital to the value of physical and financial capital (Steward 2010, loc 1413).

Steward (2010, loc 1465) reminds that it's one thing to claim that intelligence is the most important asset, but it's quite another to turn that insight to plans and strategies that lead to better performance. In addition to the definition of intellectual capital, a description to plan how to invest in and manage knowledge assets is needed (Steward 2010, loc 1465). According to Steward (2010, loc 1479) the phrase; 'sum of patents, processes, employees' skills, technologies, information about customers and suppliers and experience' is useful, but only an illustration, not a definition. On other hand the phrase; 'the sum of everything everybody in a company knows that gives it a competitive edge' tells more about what intellectual capital does than about what it is Steward (2010, loc 1479). According Steward (2010, loc 1491) the definition "Intellectual material that has been formalized, captured and leveraged to produce a higher valued asset" is a good start. Steward (2010, loc 1491) continues "Intelligence becomes an asset when some useful order is created out of free-floating brainpower – that is, when it is given coherent form; when it is captured in a way that allows it to be described, shared and exploited; and when it can be deployed to do something that could not be done if it remained scattered around. Intellectual capital is packaged useful knowledge". Steward (2010, loc 1491) reminds that most employees will never encounter anything cutting edge of science, they are trying to do their jobs better and that is as important aspect of intellectual capital management as anything else.

But the previous definition loses some clarity when it's applied to large or uncertain accumulation of knowledge assets. Packaging 'softer' kinds of intellectual material or knowledge for which no familiar constraining vessel exist has troubled thinkers about knowledge management. (Steward 2010, loc 1505) Steward (2010, loc 1518) finds the following problems in

packaging 'soft' knowledge; the first one is related to classification: What kinds of material qualify to be included and what should be left out? What's an asset and what's noise? According to Steward (2010, loc 1518) the second is a problem of recognition; lots of intellectual capital is unexpressed tacit knowledge, how does one find that? Steward (2010, loc 1518) finds different type of information; data, information (a context into which the data can be put), knowledge (a conclusion drawn from the data and information) and wisdom. But Steward (2010, loc 1531) argues that the idea that knowledge can be slotted into this data to wisdom hierarchy doesn't work, because one man's knowledge is another man's data. Steward (2010, loc 1545) continues you cannot define and manage intellectual assets unless you know what you are trying to do with them. The approach should start with the identification of the types of problems you would like to solve within the organization or opportunities you would like to focus on (Steward 2010, loc 1545).

According to Steward (2010, loc 1571) intellectual capital takes two forms; there's 'the semi-permanent body of knowledge' and the 'tools that augment the body of knowledge'. By the first Steward (2010, loc 1571) means the expertise that grows up around a task, a person or an organization like; communications or leadership skills, understanding the biochemistry of viruses, knowing what customers are really paying for when they come to your company and how to price it (value proposition), familiarity with organization's processes, values and culture. According to Steward (2010, loc 1571) the tools that accumulate and increase the body of knowledge either brings in facts, data or information or delivers expertise and augmentation to others who need them when they need them. As an example Steward (2010, loc 1571) states that phone numbers are not intellectual capital; phone books are.

A lot of 'soft' knowledge eludes the definition because it's tacit and therefore hard to explain or even to see. But people know more than they realize, they develop large repertoires of skills, information and ways of working that they have internalized to the point of obliviousness. Identify them, name them, package them and these tacit capabilities can be the basis of a new career. Steward (2010, loc 1585) According to Steward (2010, loc 1585) this same applies to organizations; they are full of tacit knowledge. The great thing about tacit knowledge is that it's automatic, requiring little or no time or thought, but the problem with tacit knowledge is that it can be wrong, it's hard to change and it's difficult to communicate (Steward 2010, loc 1571-1598). Because of this Steward (2010, loc 1611) states that tacit knowledge needs to become explicit; "what's unspoken must be said aloud" otherwise it cannot be examined, improved or shared. This should be a never ending cycle; identify tacit knowledge, make it explicit, encourage this new knowledge to soak in and become tacit Steward (2010, loc 1624).

According to Steward (2010, loc 1624) every organization houses valuable intellectual material in the form of assets and resources, tacit and explicit perspectives and capabilities, data, information, knowledge and wisdom. But Steward (2010, loc 1624) argues that you can't manage or even find soft forms of intellectual capital unless you can locate it in places in a company that are strategically important and where management can make a difference.

Where to look? From people, structures and customers, answers Steward (2010, loc 1636). Following this intellectual capital is divided into three parts: Human Capital, Structural Capital and Customer Capital. Steward (2010, loc 1636) Also known as Human Capital, Organizational Capital and Relational Capital (Starovic, D & Marr, B 2003, 7).

Each of the three elements can be measured and targeted for investment. Each is intangible and yet each describes things that managers and investors can get their arms around. Once you are thinking in categories of human, structural and customer capital, it becomes possible to ask the questions that allow you to identify tacit and explicit knowledge. (Steward 2010, loc 1636).

According to Steward (2010, loc 1649) the distinction between human and structural capital is fundamental to managing knowledge. Human capital is the source of innovation and renewal, but sharing and transporting knowledge requires structural intellectual assets which turn individual know-how into the property of a group. Similar to human capital also structural capital exists only in the context of a point of view, a strategy, a destination, a purpose. Steward (2010, loc 1662). Steward (2010, loc 1662) defines it as "the organizational capabilities of the organization to meet market requirements" and continues "it packages human capital and permits it to be used again and again to create value".

Steward (2010, loc 1676) defines customer capital as the value of an organization's relationships with the people with whom it does business; "the depth (penetration), width (coverage) and attachment (loyalty) of our franchise" and "it's the likelihood that our customers will keep doing business with us". When used in the form of relationship capital it can be broadened to include the value of relationships with suppliers (Steward 2010, loc 1676).

According to Steward (2010, loc 1702) intellectual capital is not created from discrete packs of human, structural and customer capital but from the interplay among them. "Intellectual capi-

tal is useless unless it moves, it's no good having some guy who is very wise and sits alone in a room" (Steward 2010, loc 1702).

2.3.1 Human capital

Ideas are free. They are also a plentiful, probably an infinite, resource; it's the organized development of constructive ideas that is a management challenge. (Steward 2010, loc 1812) According to Steward (2010, loc 1825) firms are used to think of employees in terms of their cost. Steward (2010, loc 1825) is asking what is their value? Steward (2010, loc 1839) believes that companies have hard time distinguishing between the cost of paying people and the value of investing in them. "Hired hand, not a hired mind" (Steward 2010, loc 1851).

"If intellectual capital is a tree, then human beings are the sap that make it grow" (Steward 2010, loc 1851). Steward (2010, loc 1864) argues that in the information age no one can afford to use human capital inefficiently. To use more of what people know, companies need to create opportunities for private knowledge to be made public and tacit knowledge to be made explicit. (Steward 2010, loc 1877).

Steward (2010, loc 1904) lists three types of human skills: Commodity skills (abilities that are not specific to any particular business and are more or less equally valuable to any number of business), leveraged skills (knowledge that, while not specific to a particular company, is more valuable to it than to other, they tend to be industry-specific, but not company-specific), proprietary skills (company-specific talents around which an organization builds a business).

Difficult to replace, low value added	Difficult to replace, high value added
Easy to replace, low value added	Easy to replace, high value added

Table 5. Steward's four quadrants of workforce (Steward 2010, loc 1917-1929)

Steward (2010, loc 1917-1929) introduces the above four quadrants of workforce (table 5) and states that company's human capital is in the upper right quadrant, embodied in the people whose talent and experience create the products and services that are the reason customers

come to it and not to a competitor. That's an asset, the rest quadrants are merely labor costs (Steward 2010, loc 1929).

According to Steward (2010, loc 2019) the real origin and ownership of ideas and know-how aren't corporate nor personal, they belong to something that is coming to be known as a 'community of practice'. Steward (2010, loc 2031) defines communities of practice as the shop floor of human capital, the place where the stuff gets made, "a group of professionals, informally bound to one another through exposure to a common class of problems, common pursuit of solutions and thereby themselves embodying a store of knowledge". Steward (2010, loc 2031) continues that communities of practice develop over time, "you can define them in terms of the learning they do over time". Second, "a community of practice has an enterprise, but not an agenda" it forms around a value-adding something we are all doing. Third, the enterprise involves learning, over time communities of practice develop customs and culture, "a way of dealing with the world they share". (Steward 2010, loc 2031-2044) Steward (2010, loc 2031) continues that most of us belong to more than one and not just on the job.

Steward (2010, loc 2044) finds an important role for communities of practice with human capital formation: knowledge transfer and innovation.

Organizations should recognize and foster the growth of intellectual communities in areas that are central to their competitive advantage, meaning those hard to replace, high value activities in the upper right quadrant of the table 5 (Steward 2010, loc 2134).

2.3.2 Organizational capital

Steward (2010, loc 2249) asks the question "How do they turn the candlepower of their people into the wattage of the corporation, rather than into something that goes out 5 P.M.?" Steward (2010, loc 2260) use the tree metaphor again "human capital, the sap flowing beneath the bark of a tree, produces innovation and growth, but that growth ring becomes solid wood, part of the structure of the tree". Steward (2010, loc 2260) defines structural capital as containing and retaining knowledge, so that it becomes company property. "Structural capital is knowledge that doesn't go home at night" (Steward 2010, loc 2260).

Steward (2010, loc 2272) continues that even the smartest people need a mechanism to assemble, package, promote and distribute the outcome of their thinking, organization concentrates, processes and reifies knowledge work.

Steward (2010, loc 2324) finds a natural link between intellectual capital and knowledge management. With proper knowledge management every person in an organization should be able to lay their hands on the collected know-how, experience and wisdom of their colleagues. Knowledge management can save employees from spending long and costly hours repeating each other's work and also make it easy to tap into the firm's expertise and ideas. Another reason to make an effort to map corporate brainpower is coping with growth and staff turnover. (Steward (2010, loc 2324-2362)

What kind of structural capital belongs in the scope of knowledge management? Steward (2010, loc 2375-2451) lists three. First corporate yellow pages; "How speaks Arabic? Knows fluorocarbons? Led the project team that installed the phone system as headquarters?" (Steward 2010, loc 2387) Steward (2010, loc 2387) argues that in many cases it takes far too much time to answer everyday questions like these; "a system that connects inquirers to experts saves time, reduce error and guesswork and prevents the reinvention of countless wheels". Steward (2010, loc 2387) specifies the yellow pages as maps that show where the knowledge of the enterprise is located.

Second, lessons learned. According to Steward (2010, loc 2387) knowledge work is custom work and it tends to be created when and where it is sold. But that doesn't mean each project has to begin from scratch. A key way to increase structural capital is to bank lessons learned, what went right and what went wrong with instructions for others undertaking similar projects. Steward (2010, loc 2387-2399)

Competitor intelligence, according to Steward (2010, loc 2413), is the third kind of structural capital belonging in the scope of knowledge management. Steward (2010, loc 2425) argues that many companies organize knowledge about their suppliers, customers and competitors very badly. The level and quality of available information should be so high that the focus would shift from 'how do I get the information I needs?' to 'How do I exploit the information?' Steward (2010, loc 2438) Steward (2010, loc 2438 continues that one shouldn't map the knowledge of your organization unless you can link it to the strategy.

2.3.3 Relational capital

According to Steward (2010, loc 2891) every company with customers has customer capital (also called relational capital). Steward (2010, loc 2891) defines it as the value of company's

relationships with the people or organizations to which it sells. From the human, structural and customer capital, the customer capital is the most obviously valuable, after all they pay the bills. Because of this they leave footprints on the financial statements are easier to follow than those made by people, systems or capabilities. (Steward 2010, loc 2891)

Steward (2010, loc 2891) argues that despite this, customer capital is the worst managed of all intangible assets. According to Steward (2010, loc 2891) many companies don't even know who their customers are and if they do they treat them as adversaries rather than assets. Getting superior return on customer capital requires acknowledging customer relationships as assets, not just events (Steward (2010, loc 2903).

Steward (2010, loc 2903) reminds us that in this information age knowledge is what we buy and sell, knowledge is the chief ingredient of customer capital. According to Steward (2010, loc 2992), the principle of managing intellectual capital is “when information is power, power flows downstream toward the customer”. Steward (2010, loc 3031) continues that the customer today can ‘call the tune’ because he ‘knows the score’. By this Steward (2010, loc 3031) means that in a knowledge economy, information is more valuable than ever and generally customers have more knowledge than they did before.

Steward (2010, loc 3056) states that to understand the customer capital (and the wealth building opportunities it creates for both the buyer and the seller) one must look at the intangible value chain instead of the tangible one. A value chain shows how a product or service moves from first seller to end user or from raw material to goods. Value should be added at each stage. The idea is to add as much value as possible at as little cost as possible and to capture that value in your mark-up. Steward (2010, loc 3056) Steward (2010, loc 3056-3068) continues that the power of information is so great that whoever controls it controls the business. Steward (2010, loc 3068) continues that the squeeze isn't only on the supplier, but on anyone who is left out the information flow or fails to take advantage of it.

“What information drives the business?” “Who has it?” “To whom is it worth most?” Steward (2010, loc 3068). Depending on its business, according to Steward (2010, loc 3068) a company might find that it should change the physical activities it performs to take advantage of the flow of intellectual activities, meaning to move upstream or downstream to put itself where the ‘fish are biting’. As an example Steward (2010, loc 3083) uses MicroAge from the turn of the century. MicroAge moved ‘upstream’ from being a wholesaler of computers to the assem-

bly of customized computer systems. “Shifting from physical attributes to information attributes” and changed their place on the value chain. Steward (2010, loc 3095)

Steward (2010, loc 3095) talks about investing in customer capital; companies must invest in their customers the same way they invest in their people and structure. According to Steward (2010, loc 3095) customer capital is a lot like human capital; you cannot own customers any more than you can own people, but a company and its customers can grow intellectual capital that is their joint property.

Innovation as an output of human capital was discussed in chapter 2.3, but Steward (2010, loc 3107) argue that it has a customer capital component as well. Whoever you sell to wants to charge a premium to his customer too, innovation helps you both do that (Steward 2010, loc 3107). Steward (2010, loc 3119) continues that an investment made in R&D can be more productive if you already have a customer and the customer benefits by getting first crack at it, this gives your customers a change to give you feedback before you make costly mistakes.

Steward (2010, loc 3132) would also like to see customers as individuals and instead of a blind pursuit of market share is much less rewarding than an eyes open pursuit of an increased share of the business of your best customers.

To summarize Steward (2010, loc 3222-3276) finds ten principles for managing intellectual capital. 1) Companies don't own human and customer capital, the ownership is shared with their employees and their customers and suppliers. 2) To create human capital it can use, a company needs to foster teamwork and communities of practice. Individual talent is great, but it can walk out the door. 3) Organizational wealth is created around skills and talent that are proprietary and strategic. 4) Structural capital is the intangible asset companies own outright, it is what managers can most easily control. 5) Structural capital gathers knowledge that supports the work customers value and speed up the flow of that information inside the company. 6) Intangible assets like information and knowledge should substitute expensive physical and financial assets. 7) Knowledge work is custom work; mass-production solutions won't yield high profits. 8) Every company should reanalyze the value chain of the industry it participates to see what information is most crucial. 9) Focus on the flow of information, not the flow of materials. 10) Human, structural and customer capital work together. Human and structural capital reinforces each other when a company has a shared sense of purpose combined with an entrepreneurial spirit. Human and customer capital grow when individuals feel responsible for their part in the enterprise, interact directly with customers and know what knowledge and

skills customers expect and value. Customer and structural capital grow when the company and its customers learn from each other.

2.3.4 Summary

“Knowledge is more valuable and more powerful than natural resources, big factories, or fat bankrolls” (Steward 2010, loc 183) Steward (2010, loc 188) continues to define intellectual capital as the sum of everything everybody in a company knows that gives it a competitive edge. In another words it is the collaboration, the shared learning, between a company and its customers, which forces a bond between them that brings the customers back again and again (Steward 2010, loc 193). Chapter 2.3 discusses human capital, organizational capital and relational capital and also the value network in chapter 4.1 extends to both human capital and relational. Part of the company strategy should be to implement both human capital and relational into organizational capital.

Getting superior return on customer capital requires acknowledging customer relationships as assets, not just events (Steward (2010, loc 2891-2903). Steward (2010, loc 2903) reminds us that in this information age knowledge is what we buy and sell, knowledge is the chief ingredient of customer capital Steward (2010, loc 3056) states that to understand the customer capital (and the wealth building opportunities it creates for both the buyer and the seller) one must look at the intangible value chain instead of the tangible one. Again this is why the value network in chapter 4.1 is extended to the customer.

Intellectual capital is the third layer of the conceptual framework ‘onion’ (chapter 2.5). In the knowledge based view (chapter 2.2.3) intellectual capital is a source of sustainable competitive advantage. The search for intellectual capital is the reason to step deeper into the ‘onion’ to find the intangibles with value network modeling and analysis (chapters 4.1 and 4.2).

2.4 Knowledge management, future of knowledge and value networks

O’dell and Hubert (2011, loc 308) defines knowledge as information in action. O’dell & Hubert (2011, loc 308) continues; “until people take information and use it, it’s not knowledge”. In business context knowledge is what employees know about their customers, one another, products, processes, mistakes and success (O’dell and Hubert 2011, loc 308). O’dell and Hubert (2011, loc 308) includes that to this definition the knowledge can be both tacit and explicit.

According to O'dell and Hubert (2011, loc 308) APQC (American Productivity & Quality Center) defines knowledge management as a systematic effort to enable information and knowledge to grow, flow and create value. O'dell and Hubert (2011, loc 308) continue on the subject; "creating and managing the process to get the right knowledge to the right people at the right time and help people share and act on information in order to improve organizational performance".

O'dell and Hubert (2011, loc 308) also defines the concepts of KM program, KM approaches and KM activities. Organizations implement a KM program to establish and promote knowledge sharing practices. Organizations implement KM approaches such as communities of practice, expertise location systems and wikis to formalize and enable knowledge sharing. KM activities on the other hand are all of the things used to support the program and its approaches, such as planning and design, change management, communication, training and budgeting. (O'dell and Hubert 2011, loc 308-323)

According to O'dell and Hubert (2011, loc 323) KM program should; "connect employees to one another to help them excel at their jobs, connect employees to knowledge assets, connect those with experience or know-how with those who need it." These actions will accelerate the rate of learning, cut down the risk of not knowing and repeating mistakes and retain knowledge assets when people move, leave or retire (O'dell and Hubert 2011, loc 329).

2.4.1 The future of knowledge

Allee (2003, loc 236) insist that we need to look into how business knowledge is evolving, what do we need to know for the future as well for today, what is the pattern of our learning and where are we hoping it will take us? Allee (2003, loc 236) argue that businesses are evolving into the networked patterns of living systems and these living systems require a different mind-set and completely different management tools.

Allee (2003, loc 350) is asking what do we need to pay attention to in order to be successful? According to Allee (2003, loc 294) many of the old rules for creating value no longer apply, but we still put our attention on the center and ignore the edges, focus on the center of the center, CEO and the leadership team. We have been focused on the parts instead of the whole system (Allee 2003, loc 358).

Allee (2003, loc 358) finds the edges to be blurred and fuzzy and they seem to be spilling over into other organizations. Allee (2003, loc 358) continues that innovation emerges from the in-between places, at the edges; fuzzy boundaries create innovation spaces where new forms and practices are emerging.

The center of power is shifting out to the edges and decisions are moving out from corporate headquarters to individual business units (Allee (2003, loc 358). In addition to this Allee (2003, loc 358) argue that central control is not only impractical, but also becoming impossible.

Because all of this Allee (2003, loc 369) argues that we need to start looking into the in-between places and at the not so visible aspects of business relationships, focusing on knowledge, networks, intangibles and emotional intelligence.

In this study and according to Allee (2003, loc 379) we now know the importance to pay attention to knowledge and to better leverage organizational knowledge and intelligence to create value. Allee (2003, loc 379) continues that we know that intangibles and intellectual capital need to be treated as true strategic assets. If everything is important how do we find what is most important (Allee (2003, loc 399)?

Allee (2003, loc 399) is after the changing nature, structure and identity of organizations. According to Allee (2003, loc 455) the centre is moving out from corporate hubs to more diffuse and distributed webs of business relationships and alliances. Outsourcing and partnering are expanding from the cost savings toward strategic growth. Deeply interdependent relationships require real business allies not just vendors. The degree of strategic coupling between the participants moves beyond value chain dynamics to value network dynamics where participants engage more as equals in a deeper relationships. The size of a company's value network can be much larger that it would appear at first glance. (Allee 2003, loc 487-510) According to Allee (2003, loc 521) given these developments it's time to rethink what we mean by an organization.

Allee (2003, loc 521-531) looks into different definitions of organization; Webster's dictionary defines it as "an administrative and functional structure" and The American Heritage Dictionary defines it as "a structure through which individuals cooperate systematically to conduct business" or "something made up of elements with varied functions that contribute to the whole and to collective functions: an organism". Allee (2003, loc 531) finds that this last and more organic definition opens the possibility that we may learn to see companies as truly 'liv-

ing entities'. Based on this, Allee (2003, loc 531) defines an organization as "a complex adaptive social system where people systematically cooperate to achieve a common purpose". This definition puts the social system first instead of the structure, because organizational structure cannot exist without a social system that creates and supports it. (Allee (2003, loc 531)

According to Allee (2003, loc 542) the centre is not just moving, it's an illusion. By this Allee (2003, loc 542) means we need to stop looking for the one focal point, the one leader or the one answer and start sensing patterns. It's not the pieces and parts that are most important. Dynamic relationships and interdependencies are what we must learn to work with, understand and manage. Allee (2003, loc 552) continues that managers need to manage less and attend more; "to pay attention to, to look after, to be present with, to apply oneself, to apply one's mind and direct one's attention".

Allee (2003, loc 522) argue that the core learning challenge is to understand network principles and apply them across the business practices, from technology networks, to human networks and to business networks. This means learning new tools and methods that will help us see network patterns and work with what is emerging: 1) Operationally, to understand how digital networks and technologies support people in creating, organizing and accessing the everyday knowledge they need to complete their tasks and make good decisions. 2) Tactically, to understand how social webs such as knowledge networks and communities of practice help create, diffuse and leverage knowledge and innovation. 3) Strategically, to understand organizations as participants in multiple business networks where intangibles are important for building relationships and smoothing interactions. 4) Everybody, especially leaders, needs to learn the new ethical underpinnings of success for networked organizations and how to engage with each other in the conversations that matter. (Allee 2003, loc 564)

"This is the future of knowledge" (Allee 2003, loc 573).

Allee (2003, loc 658) finds evidence of a shift toward a broader definition of success in business, with intangible assets receiving serious attention. The nature of intangibles is that you can give them away, trade them or sell them, yet you still have them to use again another day. This doesn't happen with physical resources. Knowledge and intangibles are also easy to increase with relatively few natural resources. However knowledge isn't free, it requires the right environment for learning as well as access to education and to a digital infrastructure that can support knowledge intensive business.

The first knowledge evolution is how we think about business and organizations, the second how that shift of thinking plays out in practice, in the way we work (Allee (2003, loc 750). Allee (2003, loc 771) finds us in the middle of another shift that is taking decision making and control even further from the centre. Allee (2003, loc 771) continues that the primary resource for competitive advantage is shifting from financial capital to knowledge and information. Control of the work has moved to smaller and smaller units and Allee (2003, loc 780) sees us moving toward a time when individuals control their own means of production and manage their own inputs, outputs, commitments, contracts and profitability.

Decade appeared	Data variation	Procedural order	Functional production	Managing meaning	Integrating systems	Renewing values	Union (Life)
	FOCUS AREAS						
1930			Humanistic management				
1940		Bureaucracy					
1950			Functional hierarchy				
1960				Organizational behavior			
1970					Strategy		
1980	Information technologies		Total quality	Learning organization & diversity	Systems thinking	Vision and leadership	
1990		E-business	Knowledge management		Complexity	Intangibles	Sustainability
NOW				Social networks & communities	B-webs	Global citizenship	
				Living systems			

Figure 6. Evolution of management thinking (Allee 2003, loc 835).

The figure 6 shows that the pace of learning gradually picked up after 1930s, accelerated after 1970 and seems to be continuing at an intense pace. Now we are beginning to view organizations as living systems. (Allee 2003, loc 823-833)

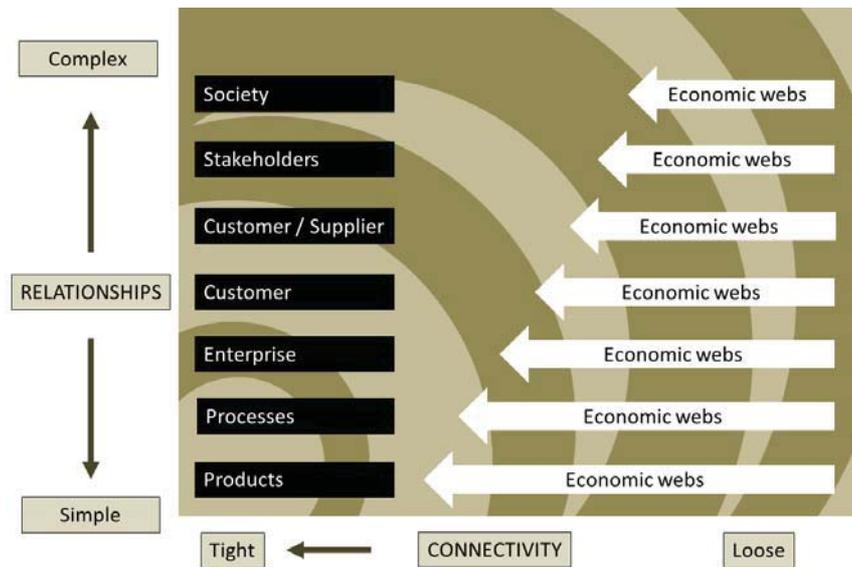


Figure 7. Expansion of the focus of business (Allee 2003, loc 843).

In the days of guilds and crafts workgroups were tightly organized with simple relationships. With the shift to the industrial economy the focus moved to production lines and then to processes. The discovery of core business processes brought in the challenge to learn working in cross functional teams. Following the thread of these processes further, we find that they include customer processes and supplier processes. There are also the other stakeholders to consider. (Allee 2003, loc 843) Allee (2003, loc 850) finds us now in a bit of trouble. "We finally learned how to think in terms of processes instead of functional units, and now we are supposed to understand how to work with webs and networks?" (Allee 2003, loc 850) Allee (2003, loc 850) argues that networks and webs can't be understood using the same old process tools and that EPR and SAP systems are often just a desperate effort to stretch the process view far enough to handle complexity, but today we have to think differently and find new tools for this next order of complexity.

Allee (2003, loc 850-861) goes as far as to say that the shift to an information based economy is driving a species-level evolution equivalent to the development of agriculture and the dawn of the industrial age. Trying to understand knowledge processes with a flow chart or trying to assign a euro valuation to an intangible simply don't work (Allee 2003, loc 880).

(Allee 2003, loc 879) uses the term 'deep shift' to describe a radical change in our worldview which changes the very foundation of our understanding, in this case the evolution of thought away from engineering toward living systems. Whenever someone undergoes this type of deep shift, their understanding expands. They see where old assumptions and ways of operating were not necessary wrong, they were just too small. (Allee 2003, loc 891)

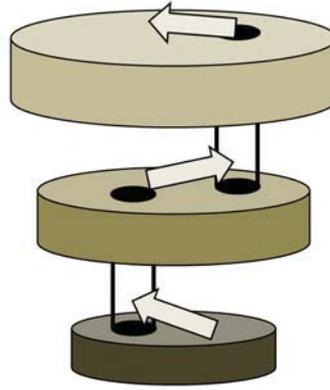


Figure 8. Deep shifts and translation (Allee 2003, loc 898).

Allee (2003, loc 892) helps us to visualize the process of deep shifts and translations with the figure 8. Allee (2003, loc 892-092) explains: "In the worldview at the bottom there may be an anomaly, something peculiar or different, that the current world-view cannot explain. Exploring such anomalies can serve as a gateway to the next order of understanding. Our questions literally pull us through the wormhole into a different, broader universe. Once we are there, we have a higher order of understanding, in which the previous anomaly is now explained. We then integrate this new worldview with the things we understood before, keeping some and discarding others that are no longer useful."

Allee (2003, loc 914-928) lists the shifting foundations of economic thinking rising from the deep shift currently underway, we must translate the old thinking and principles to determine their relevance and place in the new order.

Assumption	Old Economic Thinking	New Economic Thinking
Economic Resources are...	Finite and limited to materials available from the earth's crust	Both finite and potentially infinite as ideas are created by human minds
Principle of wealth is...	No increase in actual total of material things	Total of knowledge and ideas increases
Underlying economic law is...	Diminishing returns due to scarcity of resources, resulting in increasing costs per unit	Increasing returns as replication of discoveries leads to falling costs per unit
Markets operate as...	Commodity markets based on same products and resources	Value-added markets based on distinctly different products and unique intellectual resources
Ownership means holding...	Property rights of things in perpetuity	Limited-time property rights of patents
Work is organized by...	Division of labor	Peer-to-peer networks
The operative system dynamic is...	The tragedy of the commons, when people share and deplete same resource	No diminishment of resource when ideas are shared
Primary economic goals are...	Efficient production, extracting efficiencies from labor and machines	Bolstering future discovery through development of human creativity and knowledge
Value creation occurs through...	Value chains of simple relationships, similar to a production line	Value networks of complex, interdependent, dynamic relationships
Economic indicators are...	Quantitative	Quantitative and Qualitative

Table 6. Shifting foundations of economic thinking (Allee 2003, loc 919).

Allee (2003, loc 939) continues that new assumptions about knowledge as the primary economic resource are driving a managerial focus on knowledge and information. This dynamic new world of knowledge and value will require a new generation of tools and lenses, Allee (2003, loc 939-964) is listing these shifting world-views of organizational and managerial thinking in the table 7 below:

Assumption	Old Management Thinking	New Management Thinking
Scientific foundations for management practice are ...	Newtonian physics, engineering	Quantum physics, natural and behavioral science
Management focuses on ...	Predictability and control	Understanding, insight, coherence
Worker relationships are ...	Employee based	Contract based
Information is ...	Ultimately knowable	Infinite and unbounded
Knowledge creation is ...	Individually focused	Collectively, collaboratively, organizationally focused
Ethical foundations are	Competition and individual survival	Cooperation and survival of the network
Laws of success are based on ...	Competition Dominance	Cooperation Relationships
Inner life is ...	Not relevant	Very important
Feelings are ...	Interference	Feedback, source of insights
Sense of time is ...	Monochronic (linear, one thing happening at a time)	Polychronic (nonlinear, many things happening at once)
We understand by...	Dissecting into parts	Seeing wholes and dynamic relationships
Growth is ...	Linear, manageable	Organic, chaotic
Organizations happen ...	By design	Through emergence
Governance should be...	Directed from the top	Distributed, democratic
Workers need to be ...	Specialized, segmented	Multifaceted, adaptive, always learning
Motivation is from ...	External forces or influence	Intrinsic creativity and core beliefs
Change is ...	Something to worry about	All there is

Table 7. Shifting Worldview of organizational and managerial thinking (Allee 2003, loc 898).

Allee (2003, loc 964) argues that the difference between these two worlds is readily apparent with these comparison charts. They are rooted in very different sciences and originate from quite different assumptions and perspectives (Allee 2003, loc 964).

The mechanistic worldview doesn't work anymore, but there are many things from the old perspective that will endure over time because they are valid and useful when applied to the right questions (Allee 2003, loc 975). As an example Allee (2003, loc 975) uses financial accounting methods that are still very useful when applied to questions of revenue, cost and profit, but they are not so useful when applied to intangible assets. All this means that we need to master the skills and tools that will help us better understand true complexity (Allee 2003, loc 1006)

There have been many different metaphors used to describe organizations from 'well-oiled machines' to living organisms, no matter what they are called Allee (2003, loc 1041) sees them as open systems, interacting with and adapting to the environment, with inputs and outputs.

According to Allee (2003, loc 1050) Fritjof Capra (1996) defines three key criteria of a living system as pattern, structure and process. Allee (2003, loc 1050) summarizes: The pattern of organization is the configuration of relationships among the system's components which determine its essential characteristics, the structure of the system is the physical embodiment of its pattern of organization, the process of a living system is the activity involved in the continual embodiment of the system's pattern of organization, so the process is the link between the pattern and structure.

Working with an organization as a living system would require having ways to: 1) Identify its pattern of organization as an organization. 2) Describe its structure. 3) Discover its most critical process from both a cognitive perspective and flow of energy and matter.

The pattern of organization in the 1940s and 1950s was the bureaucracy, a hierarchical reporting structure that placed people in clear roles and functions with strict vertical reporting relationships. In the 1970s companies began to experiment with matrix organizations. Now people are creating and supporting networked organizations where power is diffused and alignment based on values and identity as much as on business needs and goals. Hierarchies are becoming flatter and less important. An equally important network pattern is the way how knowledge networks and communities of practice generate and spread knowledge. (Allee 2003, loc 1096-1106)

If a particular pattern defines something as an organization, what is it that gives a company its distinct way of working and leads it to greater success (Allee 2003, loc 1116)? Allee (2003, loc 1116) lists two characteristics; identity and governance. For many businesses, the way people understand their environment and what they believe is possible, often determines the uniqueness of the company. One form of this inquiry into identity and its relationship to structure is focused on governance, the way guiding principle and agreements are developed and supported in an organization. Organizational structure is the set of defining characteristics of the enterprise that describe its unique physical embodiment as an organization. Understanding structure requires exploring the visible world of behaviours, relationships and forms and the invisible world of values, identity and beliefs. (Allee 2003, loc 1125-1146)

Organizational intelligence is the cognitive ability of the organization to be aware of itself and its environment and to devise beneficial ways to interact with that environment (Allee 2003, loc 1146). Allee (2003, loc 1146) is asking: How is a company able to sense and respond to its environment? When people in one part of the organization become aware of something in the environment, how that awareness gets transferred across the company? How can we better support organizational 'neural networks' (Allee (2003, loc 1157) is also calling them cognitive pathways), especially at the critical synapses where knowledge and ideas transfer from one person or group to another?

Allee (2003, loc 1157) argues that all organizations learn. Allee (2003, loc 1157) continues that how organizations learn and benefit from information is directly related to the ways people interact with each other and with their environment. Understanding organizational intelligence requires understanding how collective intelligence and learning operates in groups of people and in social systems. Decision making and knowledge creation are not rational processes, but social processes. A related question is how knowledge becomes so embedded in the organization that it remains accessible to the company even if a key individual leaves. All these questions are about organizational intelligence. (Allee 2003, loc 1167-1177)

According to Allee (2003, loc 1177) in addition to cognitive processes living systems have processes for exchanging energy and matter, in business terms these processes would be what we ordinarily think of as economic exchanges. We are now starting to understand intangibles also as economic exchanges, meaning they have value. We can see that a company can gain economic benefit from its cognitive ability to transform information and knowledge into learning and value. Nonphysical economic exchanges such as services, knowledge and experience make this economy quite different than it was a decade ago. The big question is how to measure, value and in the sense of grow appreciate intangible assets, including knowledge? (Allee 2003, loc 1188)

Allee (2003, loc 1231) asks another set of questions: What does it mean to work with the new network patterns of organization? What will be the shape of the knowledge we will need? Allee (2003, loc 1231) argues that it's what we don't know and are trying to understand that opens the portal to the next level. "When something is complicated it has many different parts and interactions. However, those parts and interactions can be known, understood, engineered and managed. When something is truly complex there are simply too many variables for it to ever be truly known, fully understood or managed. Life is complex. Organizations are complex." (Allee 2003, loc 1241) When something is truly complex, the whole cannot be divided

without losing its integrity and the parts also lose their integrity when separated from the whole (Allee 2003, loc 1241).

No one person can fully understand a complex system, that requires multiple lenses and multiple minds. As individuals we can only manage our roles, our activities, our relationships and how we participate. While we cannot manage a living network, it is important that we understand its dynamics. We have left behind the deterministic economy of physical goods and the production line and are now in a knowledge-based economy that behaves very differently. (Allee 2003, loc 1281)

(Allee 2003, loc 1342) summaries the continuum of complexity into three levels of practice; operational, tactical and strategic.

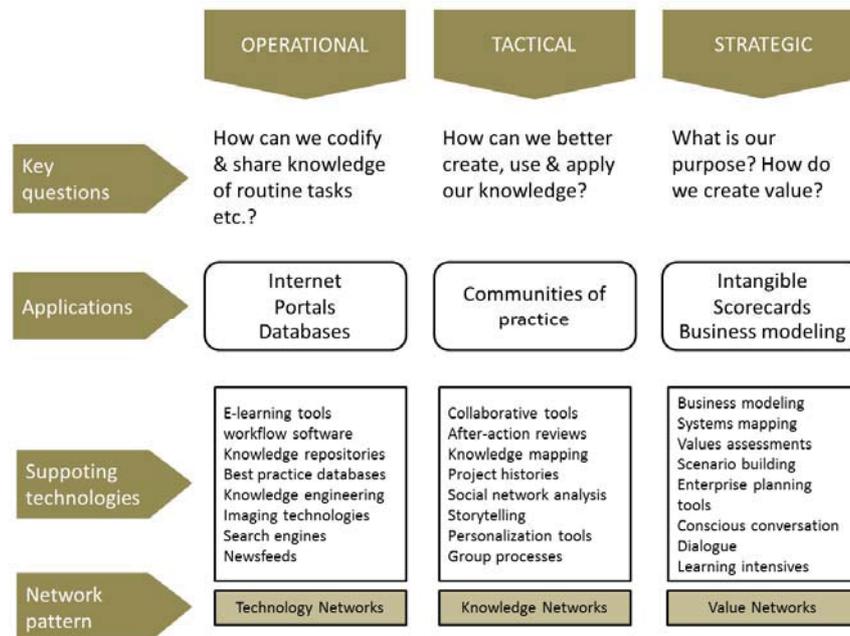


Figure 9. Continuum of complexity (three levels of practice) (Allee 2003, loc 1342).

The study is trying to find answers to the research questions (chapter 1.3) and to the research problem and needs (chapter 1.2) using the value networks modeling and analysis (chapters 4.1 and 4.2), so the paper concentrates on the strategic aspects of the continuum of complexity. According to Allee (2003, loc 1364) the key questions on the strategic level are about purpose and value creation based on the intangibles. The network perspective on the strategic level is the value network (Allee (2003, loc 1352). These are all in the very core of his study. Allee (2003, loc 1381) continues that one of the major shifts at the strategic level involves rethinking

value to include both monetary value and intangible value. The new thinking about intangibles and intellectual capital surfaced only during the past ten years, but understanding intangibles has become one of the most important business and economic questions. Instead of enterprises as lone competitors, we are now beginning to regard them as nodes in a complex interdependent value networks. (Allee 2003, loc 1381) Allee (2003, loc 1391) argues that those companies willing to learn and explore these questions will build the adaptive capacity needed for success.

A living system view brings new understanding of how a business continually renew itself and creates value (Allee 2003, loc 2487). Allee (2003, loc 2487) boldly argues that once you go down the path of intangibles, you will go back to old ways of thinking about value. Allee (2003, 2497) continues that the real foundation of the knowledge economy isn't things, bits or balance sheets; it is people and their intelligence. The challenge is to prove that intangibles do have value. "The most critical factors of success - the intelligence of employees, the systems and processes in place to get the work done and the quality of customer and supplier relationships - don't show up anywhere on the balance sheet." Allee (2003, loc 2497-2508) According to Allee (2003, loc 2508) the value of any intangible assets comes from its interplay with other assets, both physical and intangible.

What are intangibles? The terms intangibles, intangible assets, knowledge assets and intellectual capital (chapter 2.3) are basically the same thing (Allee 2003, loc 2520). Blair and Wallman (2001, 3) define intangibles as "nonphysical factors that contribute to or are used in producing goods or providing services, or that are expected to generate future productive benefits for the individuals or firms that control the use of those factors." Allee (2003, loc 2531) summaries this as "a nonphysical claim to future benefits." Allee (2003, loc 2543) explains the definition by asking "So, can you show people your education? No, not the diploma, the education". Allee (2003, loc 2543) answers the question herself "Of course you can't; it is nonphysical." Allee (2003, 2543) continues that education is used as an asset and it's expected to generate future productive benefits. Unlike physical assets, you could not sell your education directly to someone, but you can negotiate the use of it in the form of a contract or as an employee. It behaves differently, but it's still an asset. (Allee 2003, 2543) According to Allee (2003, 2543-2553) in business, these kinds of assets are under the category of human competence and referred as internal structural capital (chapters 2.3.1 and 2.3.2).

In table 8 Allee (2003, 2564- 2576) summaries the three sector framework for intangibles used by Scandia in their intellectual capital index:

External Structure	Alliances and relationships with customers, strategic partners, suppliers, investors, and the community. Includes assets such as brand recognition and goodwill.
Human Competence	Individual and collective capabilities, knowledge, skills, experience, and problem-solving abilities that reside in people in an organization.
Internal Structure	Systems and work processes that leverage competitiveness. Includes IT, communications technologies, images, concepts and models of how the business operates as well as databases, documents, patents, copyrights, and other “codified” knowledge.

Table 8. A Common three-sector framework for intangibles (Allee 2003, 2561).

Allee (2003, 2576) challenges us to stay with the assumption that intangibles have value as assets. If so, what is the key to increasing and leveraging intangibles? According to the Allee (2003, 2576) that is knowledge management. Allee (2003, 2576) is asking question again: "How is value really created?" and "What is the best way to fully utilize intangibles and how do you increase them?" Allee (2003, 2587) tries to answer this and describe intellectual capital with the figure 10. The three categories of intellectual capital (chapter 2.3) are laid out in a venn diagram (John Venn 1880) to indicate interdependency, with a dotted line for 'flow of knowledge' and 'value' at the centre of the diagram (Allee 2003, 2587). Allee's (2003, 2587) theory goes "a company increases and utilizes its intangible assets by creating, sharing and leveraging knowledge to create economic value and enhance organizational performance".

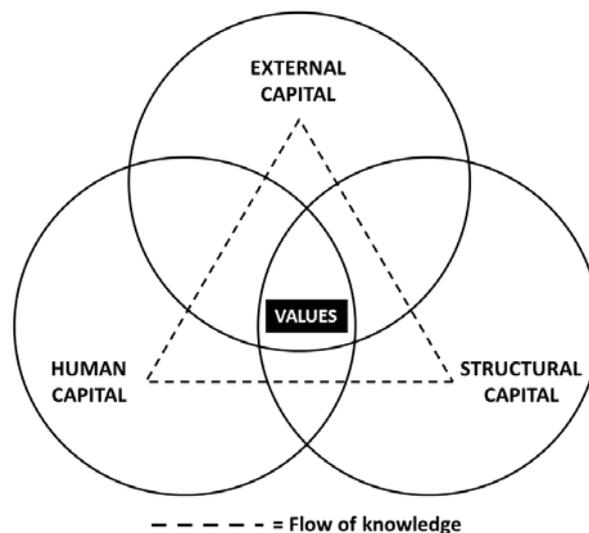


Figure 10. Model of intellectual capital (Allee 2003, 2587).

This simple model describes the way the interplay of the three types of capital generates business value, as enabled by knowledge flows and a culture of learning. It captures the sense of a company in motion as it converts skills and knowledge into economic value and competitive advantage (chapter 2.2). It's critical to manage the areas of overlap. Human capital should contribute the quality of internal structures and systems. On the other hand the structural capital should contribute to and support the improvement of human capital (chapter 2.3.1). (Allee 2003, loc 2595)

According to Allee (2003, loc 2595) another popular approach to expand organizational performance indicators is the Balance Scorecard. But the Balanced Scorecard was never intended to measure intangible assets (Allee 2003, loc 2626). Allee (2003, loc 2626) finds it important that the view of enterprise that includes intangibles as assets takes us an important first step beyond industrial age management practices.

Allee (2003, loc 2655) finds strong indicators that an expanded view of intangibles is already being put into play in business. By 'expanded' Allee (2003, loc 2655) means the combination of financial success, social success and environmental success. Allee (2003, loc 2673) would like to expand the domains of value to include social and environmental categories. Allee (2003, loc 2655) calls this the whole-system view of value, this is described on the figure 11 below.

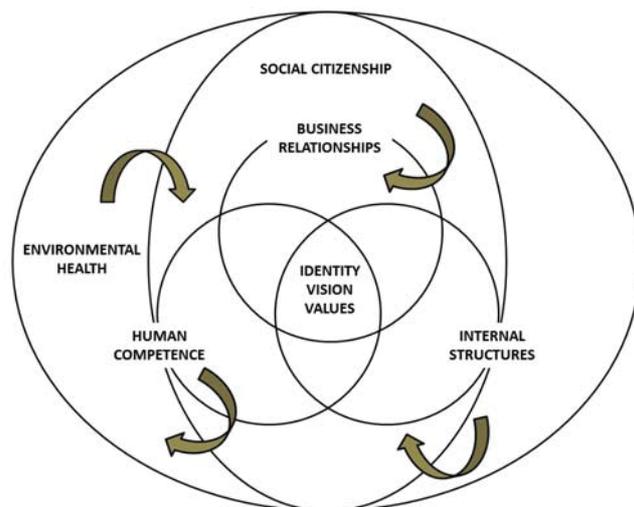


Figure 11. A whole-system view of value (Allee 2003, loc 2674).

Business relationships are the alliances and business relationships with customers, partners, suppliers, investors, regulatory bodies and government groups. Internal structures is the systems and work processes that leverage competitiveness, including IT, communications tech-

nologies, systems and software, databases, documents, images, concepts and models of how the business operates, patents, copyrights and other codified knowledge. Human competence is the individual capabilities, knowledge, skills, experience and problems solving abilities. Social citizenship is the quality and value of relationships enjoyed with the larger society through the exercise of corporate citizenship as member of local, regional and global communities. Environmental health is the value of a firm's relationship with earth and its resources, as understood through calculation of the true costs of resources consumed by an enterprise or economy and by determination of equitable exchange or contribution to the health and sustainability of the environment. Corporate identity is the value of a firm's vision, purpose, values, ethical stance and leadership as it contributes to brand equity and economic success in business and employee relationships. Allee (2003, loc 2673-2681) Allee (2003, loc 2690) argues that the larger view is important for us to understand how organizations are evolving and changing.

Allee (2003, loc 2690) talks also about social capital. The definition "social capital consists of the stock of active connections among people: the trust, mutual understanding and shared values and behaviours that bind the members of human networks and communities and make cooperative action possible" Allee (2003, loc 2700) This is similar to 'strong form trust' that Barney & Clark (2007, 113) talks about. Allee (2003, loc 2700) sees social capital as an expression of corporate identity and as values in the centre of the diagram. "Social capital is the organization lubricant that supports knowledge sharing, collaborative work and group decision making in every arena of value" Allee (2003, loc 2711).

According to Allee (2003, loc 2760) to understand the value dynamics of intangibles we also need to understand how intangibles work as negotiables in economic exchange and how they can be considered as deliverables. Intangibles can be converted to monetary value or bartered directly as intangibles (Allee 2003, loc 2851). Allee (2003, loc 2851) explains; intangibles are offered for trade in the currency based market packaged as a good or a contract with specific deliverables, in this case the intangible has been converted to another form of value, into a tangible product. "For example, someone could take his or her professional expertise and write a book" Allee (2003, loc 2851). In addition to this intangibles are also put into economic play without converting them to monetary value. When money is not involved in a trade, the trade is a form of barter. Allee (2003, loc 2861) Allee (2003, loc 2681) has the following example; "One person may extend technical expertise to an associate in exchange for advice about marketing products". So intangibles are negotiable, they can be exchanged for something else Allee (2003, loc 2871). Intangibles can be traded without losing its possession. In an economic

knowledge exchange both parties not only gain the other person's knowledge but they can actually create more knowledge of value to both of them (Allee (2003, loc 2871).

In addition to being assets, intangibles are also negotiable and deliverables Allee (2003, loc 2882). Intangibles are assets that can be managed and measured using nonfinancial scorecards. Intangibles are negotiable goods and economic offerings and are exchanged all the time as part of the business. Intangibles are deliverables, those large and small, unpaid or noncontractual activities that make things work smoothly and help build relationships. In the light of these attributes, it becomes clear that intangibles are 'real'. Allee (2003, loc 2882-2905)

2.4.2 Value networks

According to Allee (2003, loc 2919) these value exchanges can be described with a simple mapping technique. Allee (2003, loc 2919) continues that any enterprise or business network can be mapped as a unique living system. Modelling exchanges of intangibles can help illuminate some of the significant cognitive pathways and interfaces from which new knowledge and innovation may emerge. Allee (2003, loc 2931)

For the purpose of this method Allee (2003, loc 2931) defines the terms 'tangible' and 'intangible' as follows. **Tangible** exchanges involve goods, services or revenue, including all transactions involving contracts and invoices, return receipts of orders, requests for proposals, confirmations or payments. Knowledge products or services that generate revenue or are expected and paid for as part of service, are defined as tangible and are depicted in the mapping as goods, services and revenue. Allee (2003, loc 2919-2931) **Intangible** knowledge and information exchanges flow around and support the core product and service value chain, but are not contractually paid for. These include strategic information, planning knowledge, process knowledge, technical know-how, collaborative design work, joint planning activities and policy development. (Allee 2003, loc 2931)

Allee (2003, loc 2942) shows how the both tangible and intangible value exchanges can be mapped as a flow diagram (figure 12).

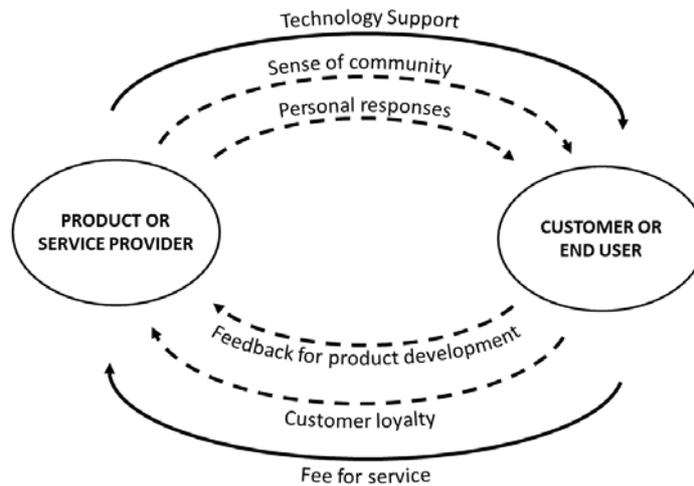


Figure 12. Mapping the value exchanges (Allee 2003, loc 2947).

The Service Provider provides technology support in exchange for a fee. Personalized offerings are extended to the customer to elicit feedback and usage data. That is an exchange of knowledge intangibles. What the technology provider is really trying to do is gain customer loyalty; this is also an intangible exchange, an exchange of benefits. (Allee 2003, loc 2950)

In the diagram above the ovals represent the participants or roles. Participants send or extend deliverables to other participants. Arrows represent the direction the deliverables are moving during a specific transaction. (Allee 2003, loc 2950)

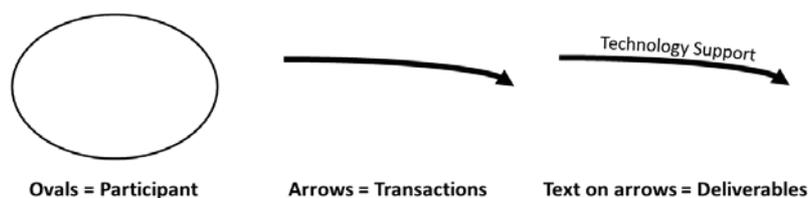


Figure 13. Three elements of Allee's HoloMapm diagram. (Allee 2003, loc 2950)

Allee (2003, loc 2950) explains; in the diagram participants are real people who are carrying out roles in the system. They are people or groups of people that have the power to initiate action, engage in interactions, add value and make decisions. Transactions or activities are represented by arrows. Participants tend to be stable over time, but transactions are temporary and transitory. One-directional arrows specify specific activity, who is generating it and where it ends. Deliverables on the arrows are the actual 'things' that move from one participant to another. The deliverable can be physical or tangible, like a document or the deliverable can be nonphysical, like a message or request that may be delivered only verbally. It can also be an

intangible deliverable of knowledge about something or a favour. (Allee 2003, loc 2960-2970)
 Allee (2003, loc 2970) emphasizes that it's the 'what' that is important, not the form it takes.

Allee (2003, loc 2970) defines that an exchange occurs in these networks when a transaction results in a deliverable coming back. In the example in the figure 14 the arrow labelled 'product information' originating with the manufacturer describes the intangible traveling through the distributor to the assembler and to the end user before generating the 'return' of an order to the manufacturer (Allee 2003, loc 2981-2988). According to Allee (2003, loc 2988) an exchange like this is a 'simplicity', a simple pattern and principle that can encompass enormous complexity. Allee (2003, loc 2988) continues that this exchange network is the basic 'pattern of organization'. The figure 14 defines a structure that is a manufacturing and distribution value network. The tangible exchanges depict market exchanges of matter and energy (in this case money) and the intangible exchanges depict cognitive and emotive exchanges as favours and benefits. (Allee 2003, loc 2988)



Figure 14. A HoloMap diagram of exchanges in a network (Allee 2003, loc 2983).

Allee (2003, loc 3004) argues that organizations are complex systems with simply too many variables to map or to fully understand and questions if her own modelling and mapping is useful? And continues that working with the method described here is not going to magically make complex things simple, but it can serve as a powerful visual tool to spark and support a particular type of conversation and illuminate some fundamental dynamics. Allee (2003, loc 3013) Similar to Allee, this paper is exploring the questions about how value is created, what intangibles are important, which roles are critical, how complex processes interact with each

other and how business really works and according to Allee (2003, loc 3013) this technique can be very useful.

According to Allee (2003, loc 3013-3042) modeling business only with ‘engineering’ type of tools and as value chains (chapter 2.2.1) (Magretta 2012, loc 900) doesn’t help us analyse the countless number of value-creating activities that take place across the enterprise. Another problem that Allee (2003, loc 3024) finds in organizing around business processes is the tendency to embed them in rigid bureaucracies, technology systems and structures such as EPR and SAP. According to Allee (2003, loc 3042) “One can engineer processes and physical materials; one can’t engineer people” meaning that the engineered process approach completely ignores the individual.

That focus is totally backwards from the previously discussed living systems perspective. Engineering focus is blind to the organizational intelligence embodied in real, living, breathing people. (Allee 2003, loc 3035) “Small wonder investments in people are regarded as an expense” (Allee 2003, loc 3035). Allee’s (2003, loc 3035) first priority in moving to a living systems perspective is to have individuals and groups show up as the active agents in the system.

Allee (2003, loc 3035) is asking what else needs to be part of the living systems perspective and recalls the discussion about living systems in chapter 2.4.1 (Allee 2003, loc 1050). According to Allee (2003, loc 3046) the pattern of organization is the ‘network’ and core activity the ‘exchange’. The way to map exchange activity is to map the tangible and intangible transactions between the participants as deliverables. The participants in this are the real people who are the active agents of the system. To describe the unique structure of the organization we need to describe the tangible and intangible exchanges that happen between people in the system. (Allee 2003, loc 3046)

Allee (2003, loc 3056) defines a value network as a web of relationships that generate both tangible and intangible value through complex dynamic exchanges between individuals, groups or organizations. Allee (2003, loc 3056) reminds that these knowledge and other intangible exchanges don’t just support the business model; they are part of the business model.

Value network modeling and analysis are described in more detail in chapters 4.1 and 4.2.

2.4.3 Summary

Knowledge management is defined as “a systematic effort to enable information and knowledge to grow, flow and create value” (O’dell and Hubert 2011, loc 308). Knowledge management in detail is outside of the scope of the study. The chapter concentrated more on how business knowledge is evolving into the networked patterns of living systems and how these living systems require a different mind-set and completely new tools. The chapter also introduced the value network analysis used to raise the awareness of the intangibles in chapter 4. More study into knowledge management is required if the recommendations in chapter 5 are to be implemented.

The center of power is shifting out to the edges and decisions are moving out from corporate headquarters to individual business units (Allee (2003, loc 358). In this study and according to Allee (2003, loc 379) we now know the importance to pay attention to knowledge and to better leverage organizational knowledge and intelligence to create value. Allee (2003, loc 379) continues that we know that intangibles and intellectual capital need to be treated as true strategic assets. Allee (2003, loc 531) defines an organization as "a complex adaptive social system where people systematically cooperate to achieve a common purpose". Allee (2003, loc 658) finds evidence of a shift toward a broader definition of success in business, with intangible assets receiving serious attention. The nature of intangibles is that you can give them away, trade them or sell them, yet you still have them to use again another day. This doesn't happen with physical resources. Raising the awareness of the importance of intangibles and intellectual capital is key topic in the paper and are discussed further in chapters 4 and 5.

2.5 Conceptual framework

The conceptual framework will guide the research process and support the answering of the research questions. It will also combine the theoretical and empirical parts of the paper together.

The goal of the study is to raise the awareness of the purpose and value creation based on the intangible resources and to study if these resources exist. The theoretical part of the paper peels (from ‘crust’ to ‘core’) the current literature from corporate strategy (2.1), through competitive advantages (2.2) and intellectual capital (2.3) to value networks (2.4.2) to show the importance of intangibles as part of a strategy. According to (Allee 2003, loc 1381) in chapter 2.4.1, understanding intangibles has become one of the most important business and econom-

ic questions and one of the major shifts at the strategic level involves rethinking value to include both monetary value and intangible value. Strategic decisions should utilize intellectual capital to gain competitive advantages from intangibles.

The empirical part of the paper will dig its way through the conceptual framework from the center to the surface (from ‘core’ to ‘crust’) and study if the thesis of the literature review applies in the Data Communication Networks –business segment. Value network modeling and analyses will be used to study the value network of an ongoing customer project in the Data Communication Networks –business segment’s solution ecosystem to see if intangibles described by the literature can be found. Allee (2003, loc 2931) explains what the research should be looking for: “Intangible knowledge and information exchanges flow around and support the core product and service value chain, but are not contractually paid for. These include strategic information, planning knowledge, process knowledge, technical know-how, collaborative design work, joint planning activities and policy development”.

If these types of intangible knowledge and information exchanges are found, the study will see how they can be mapped into the concept of intellectual capital and if this intellectual capital can be seen as an important asset in the project X and furthermore as competitive advantage in general? Finally it will be discussed if this competitive advantage should shape the strategy of the Data Communication Networks –business segment?

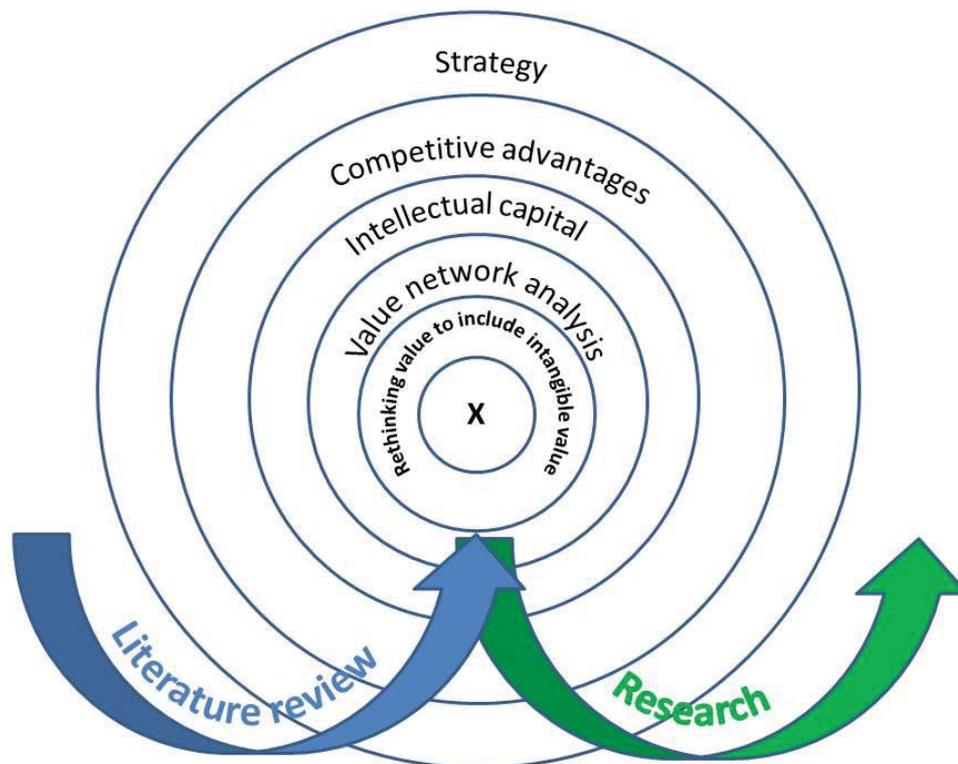


Figure 15. Conceptual framework.

3 Research approach

The research approach is a combination of the worldview (research philosophy), the research design and the research method.

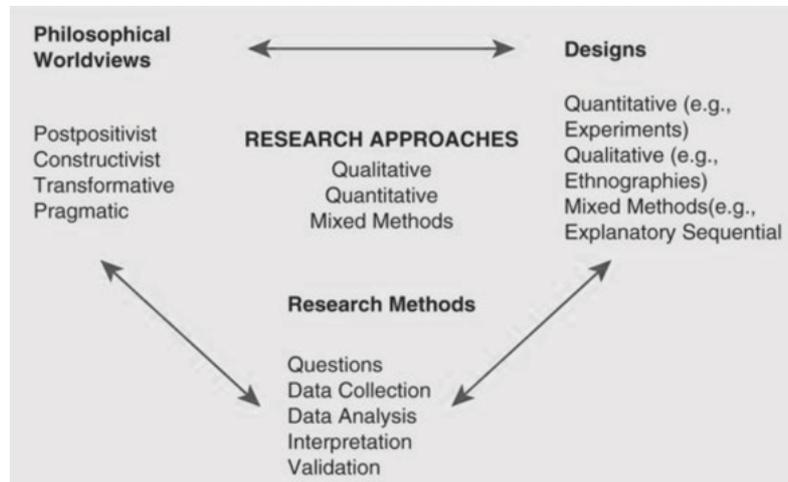


Figure 16. The Interconnection of worldviews, design, and research methods (Creswell 2014, loc 729)

The combination of these three issues takes the study to the direction of qualitative research approach. The research philosophy, research design and research method leading to this are described in chapters 3.1, 3.2 and 3.3.

3.1 Research philosophy (worldview)

According to Creswell (2014, loc 729) the worldview addresses the following: The philosophical worldview proposed in the study, a definition of basic ideas of that worldview, how the worldview shapes the approach to the research.

The nature of the research problems, issue being addressed, the researcher's role and the audience of the study takes the worldview towards constructivism. The research problems nature of looking for understanding and fact that the issue is involving multiple participants are central elements of constructivism (Creswell 2014, loc 744). In constructivism the researcher recognizes that their own role as part of the value network shapes their interpretation (Creswell 2014, loc 796). Constructivist researcher seeks understanding of the world through subjective

meanings of people's experiences and rather than narrowing these meanings into a few categories or ideas, the researcher looks for the complexity of views. (Creswell 2014, loc 789).

In chapter 2.4.1 Allee (2003, loc1241) talks about this same complexity of organizations and about the complex whole that cannot be divided without losing its integrity and about the parts that also lose their integrity when separated from this whole. Similarly, Creswell (2014, loc 794) says that these subjective meanings are formed through interaction with others. In the case of this study these interactions will be studied as the value networks of single customer project in the Data Communication Networks –business segment.

As mentioned above, in constructivism the researchers are part of the value network, they recognize that their own role and background shape their interpretations. This is important with validity and reliability of the study. According to Marschan-Piekkari and Welch (2004, 469) in these intermediate positions (such as constructivism) the concept of truth is more problematic and arbitrary than in pure objectivism. Validity and reliability will be discussed in chapter 3.3.3. The process of this qualitative research is largely inductive, the inquirer/researcher generates meaning from the data collected (Creswell 2014, loc 805).

Another potential research philosophy for the study could have been pragmatism. One of the reasons to choose constructivism over pragmatism is to narrow the research approach purely to qualitative research instead of mixed method research. Future research could be done with more pragmatic point of view or even with totally quantitative approach.

The worldview or paradigm is a basic set of beliefs that guide action and it can also be divided into ontology and epistemology. These research philosophies will be presented next.

3.1.1 Ontology

Ontology, “study of being”, is concerned with the nature of reality and the way the world operates Saunders et al. (2007, 108). They talk about understanding the “details of the situation to understand the reality or perhaps a reality working behind them”. In order to understand the actions in the value networks we need to understand what is motivating the actions of the social actors (Saunders et al. 2007,107). Saunders et al. (2007,107) state that in subjectivism the researcher's role is to understand the subjective reality of the phenomenon to make sense of and understand the motives and actions behind it. Do we perceive the reality the same way as our customers and other parties in the value networks? Can studying the value networks with

subjectivism help us to understand the different realities? Therefore the ontology of the study is subjective.

3.1.2 Epistemology

Epistemology, “study of knowledge”, concerns what constitutes acceptable knowledge in a field of study (Saunders et al. 2007,102).

In this study the researcher is part of the phenomenon (part of the value network), so the positivism assumption that the researcher is independent of the subject of the research (Saunders et al. 2007,103) does not apply. Instead “the ‘feelings’ researcher is part of the data collection process” (Saunders et al. 2007,103). The study looks into the value network of a customer project in the Data Communication Networks – business segment and that makes the researcher a ‘feelings’ researcher’. “Researcher’s goal is to make sense of the world around us” (Saunders et al. 2007,107) and “interpret the actions of others” (Saunders et al. 2007,107). The value network analysis will require that the study follows interpretivism. Interpretivism perspective is also appropriate with the other relevant theories to the field of the study; organizational behavior, marketing and HR-management (all of which could be part of the future research on the topic) (Saunders et al. 2007,107).

3.2 Research design

The researcher not only selects the qualitative research approach, the researcher also decides the type of study inside this approach. Research design is the type of inquiry that specifies the direction for procedures in a research. This can also be called strategies of inquiry. (Creswell 2014, loc 864)

The nature of the problem takes the study to a single case study research. “Research which involves an empirical investigation of a particular contemporary phenomenon within its real life context” (Saunders et al. 2007,139). Case studies aim to understand the complex relationship between factors as they operate within a particular social setting (Denscombe 2014, loc 403). The study looks answers to questions what, why and how. (Saunders et al. 2007,139). Case studies are a design of inquiry used in many fields. Researcher develops an in-depth analysis of a case, in this study of activities and processes involving a number of individuals in the value network. Cases are bounded by time and activity. Researcher collects detailed infor-

mation using a variety of data collection procedures over a period of time (in this case with value network modeling and analysis) (Creswell 2014, loc 864).

3.3 Research methods

Researchers methods refer to techniques and procedures used to obtain and analyze data (Saunders et al. 2007, 3). The research method in the study is observation. "When the research is concerned with that people do, an obvious way in which to discover this is to watch them do it". This includes systematic observation, recording, description, analysis and interpretation of people's behavior. (Saunders et al. 2007, 282) This fits very well together with the actions in value network analysis. According to Saunders et al. (2007, 282) there are two types of observation; participant observation and structured observation. The study will use participant observation, because the observatory is already part of the organization under the study. Participant observation has not been used widely on management and business research, but according to Saunders et al. (2007, 284) this doesn't mean that it has limited value for management and business researchers.

3.3.1 Data collection

Saunders et al. (2007, 286) and (Denscombe 2014, loc 5089) discuss the different roles the participant observer can adopt: complete participant, complete observer, observer as participant and participant as observer. The role of the observer in this study is something between a complete participant and a participant as observer. In both roles the observer is a member of the group where he/she is performing the research (Saunders et al. 2007, 287). The difference is that the role of the complete participant as an observer is shield from the subjects and in the role of participant as observer the purpose of the researcher is revealed (Saunders et al. 2007, 287-288). In this study the role of the observer is not hidden neither is it advertised, the research is conducted as part of the daily operations. This also clears the ethical considerations raised by Saunders et al. (2007, 289) and Denscombe (2014, loc 5122) because the topics observed are normal day to day business functions.

Saunders et al. (2007, 289) finds three types of data generated by participant observation; primary, secondary and experiential. The study makes mostly primary observations via value network modeling, but also uses secondary observations to interpret the primary observations. Data classed as descriptive observation is described as "In descriptive observation you may concentrate on observing the physical setting, the key participants and their activities,

particular events and their sequence and the attendant processes and emotions involved" (Saunders et al. 2007, 290). This is quite similar to the elements of the HoloMap / value network described by Allee (2003, loc 2950) in chapter 2.4.2. Saunders et al. (2007, 291) continues that the job of the researcher is to develop a framework of theory that will explain what is going on in the studied research settings, this sounds a lot like a value network.

Participant observation is an unobtrusive method of data collection that allows the researcher to gather information about the phenomenon as it exists in its natural setting. It also helps the researcher to deal with the detail, the subtleties, the complexity and the interconnectedness of the phenomenon being investigated. (Denscombe 2014, loc 5043-5068).

Before anything else the researcher aims to get an overall feel for the situation, Denscombe (2014, loc 5101) calls this holistic observation. In this study the researcher is part of the organization and the phenomenon being studied, so this 'background scene-setting' (Denscombe 2014, loc 5101) is already done as part of the researchers day to day work and is described in chapters 1 and 2.5.

The 'focused observations' are done in the form of the value network modeling, which also act as the permanent record of the observations (Denscombe 2014, loc 5101-5111). In Allee's examples value networks are done in teams and on larger parts of the organization, for example she describes a project undertaken with a global technology company with an international team (Allee 2003, loc 3154). In this study the scope of the value networks analysis is a single customer project. The scope is chosen to fulfill the purpose of this study and to second the conceptual framework. The need for larger scale value networks analysis in the organization is discussed in chapter 5.

3.3.2 Data analysis

In the scope of this study the data analysis will be performed by the participant observer in form of value network analysis (chapter 4.2). The value network analysis gives us a framework and guides the analysis in the direction of deductive qualitative analysis. Saunders et al. (2007, 152) reminds that in this there is a danger of logic leaps and false assumptions. After all the whole idea of value network analysis is to find the intangible resources, so we need to make sure that the value network modeling to start with and the value network analysis are correct and not distort by the assumptions from the theory. More about validity and reliability in chapter 3.3.3.

3.3.3 Validity and reliability

About the topic concerning participant observation Saunders et al. (2007, 291) mentions observer bias as the biggest threat to validity and reliability, but right after that statement they state that we cannot avoid observation bias, the most important thing is to be aware of the threat it poses to reliability and seek to control it. According to Denscombe (2014, loc 5054) a concern for seeing things as they really are without disturbing the naturalness of the setting makes preserving the naturalness of the settings a key priority.

According to Denscombe (2014, loc 5234) the fact that the participant observation relies so crucially on the researcher as the instrument of research, it becomes difficult to repeat the study to check for reliability. The goal of this study is to raise the awareness of the importance of the intangible resources and for that the validity and reliability of the research is high enough. In Allee's examples the value network analysis are done more as a team work which will reduce the observation bias. This and the use of other research methods in the future research on the subject can improve validity and reliability.

4 Findings and discussion

4.1 Value network modeling

The project in the scope of this study used in the value network modeling and analysis is a specific customer project. Outcomes of the project are plastic injection molding molds and molded plastic products for a specific customer project. The project is managed by Fibox Oy and sold by Fibox Plastic & Aluminium Mechanics Oy. Because of an existing NDA the project is not described in detail, nor are the participants on the customer side mentioned. This doesn't diminish the value network modeling or the analyses and doesn't effect the value of the study.

The first step in the value network modeling process is to consider all the groups, both internal and external playing key roles in the activities in this customer project (Allee 2003, loc 3093).

The key participants in this case inside Fibox are...

Fibox Oy

FTTH Product Specialist

Key Accountmanager FttX

Fibox Plastic & Aluminium Mechanics Oy

Sales Development Director

Supply Chain Manager

Tool Engineer

...and from the customer side:

Customer

Product manager

Product specialist

Sourcing manager

Participants are then arranged as nodes for the network diagram (figure 17). This is similar to the ovals/circles used in Allee's HoloMap discussed in chapter 2.4 and presented in figure 13.



Figure 17. Participants.

Next we will model the network dynamics starting with the tangible transactions between the participants (Allee 2003, loc 3105). Allee (2003, loc 3105) ask questions like “What are the core money-related transactions?” “What are the tangible deliverables in the system?”

Customer is buying plastic injection molding molds and molded parts from Fibox. Molds directly from Fibox Plastic & Aluminium Mechanics Oy and molded parts (plastic components) form Fibox Oy. As discussed in chapter 2.4 and visualized in figure 13 transactions are marked as arrows and deliverables as text on arrows.

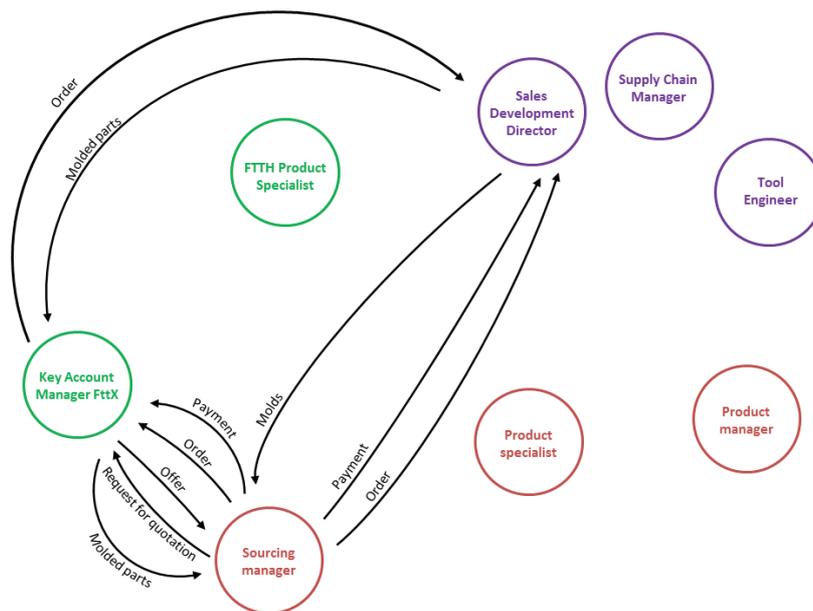


Figure 18. Tangible deliverables.

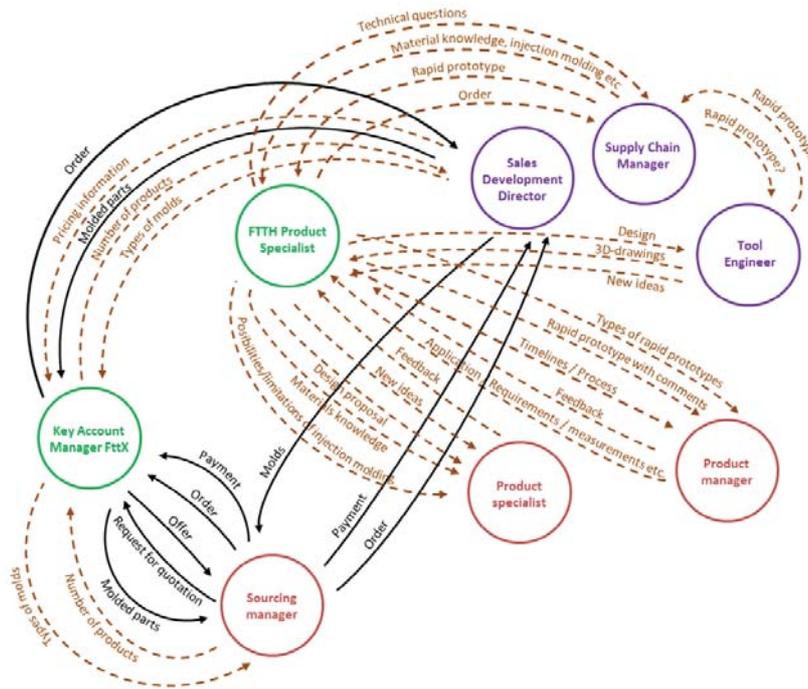


Figure 20. Combined whole-system view.

According to Allee (2003, loc 3133) the value network view helps to understand the role of knowledge and other intangibles in value creation and the contributions of the intangibles to the business are specific and measurable.

4.2 Value network analysis

The main goal in modeling the value network of this example project is to bring out the important role of the intangibles in our business. Even if some of the intangible deliverables would generate revenue or in this case would be expected and paid for as part of a service and therefore defined as tangibles (Allee 2003, loc 2930), there are still many clearly intangible deliverables in the model (please compare the figures 20 and 21).



Figure 21. Part of the intangibles defined as tangibles.

Exchange analysis according to Allee (2003, loc 3171) answers the question “What is the overall pattern of exchanges in the system?”. The value network mapping is a snapshot of a single project and doesn’t describe the whole system, so the value for an exchange analysis is quite limited, but the mapping has reached its goal to bring out the intangible exchanges, but the fact that they have not been clearly identified and managed in the past, allows the tangible exchanges to dominate the current day to day business. The risks in this product oriented thinking was raised already in the introduction of the study (chapter 1) “Because of the technical nature of manufacturing processes and the solutions the company offers to the customers, the business tends to be very product oriented. This means that the thinking inside the organization is quite product oriented.” “Fibox is not the only product oriented organization facing challenges because tangible resources are nowadays easy to copy and their value is declining.” “The study explores the possibility that even an established organization (and especially an established organization) has more in its sleeve than its currently utilizing.” The thinking that we are selling the customer molds and molded parts is very limited and produces a very different looking value map (please compare figure 18 to figures 20 and 21). A lot of existing and newly created value in the form of knowledge and intellectual capital is not recognized and therefore not utilized.

Even if we see some of the intangibles as tangibles as we did in figure 21, without the intangibles the roles of some of the participants in the value creation look quite small (figure 22), so

understanding the role of the intangibles and the importance of the whole-system view (figures 20 and 21) must be emphasized. As discussed in the literature review, greater potential for sustainable competitive advantage comes from investments in firm specific skills, because these skills cannot be easily duplicated by competitors. Central to the concept of organizational learning is the process of developing and disseminating tacit knowledge throughout the firm. (Barney & Clark 2007, 131) But if the tacit knowledge is not recognized it cannot be invested in. When we are able to identify these intangible assets we can locate this tacit knowledge and vice versa “These intangible resources are found in the organization in the form of tacit knowledge.” (Curado 2006, 3) Tangible exchanges combined with intangible exchanges and only when combined with intangible exchanges shows us the true roles of the participants.

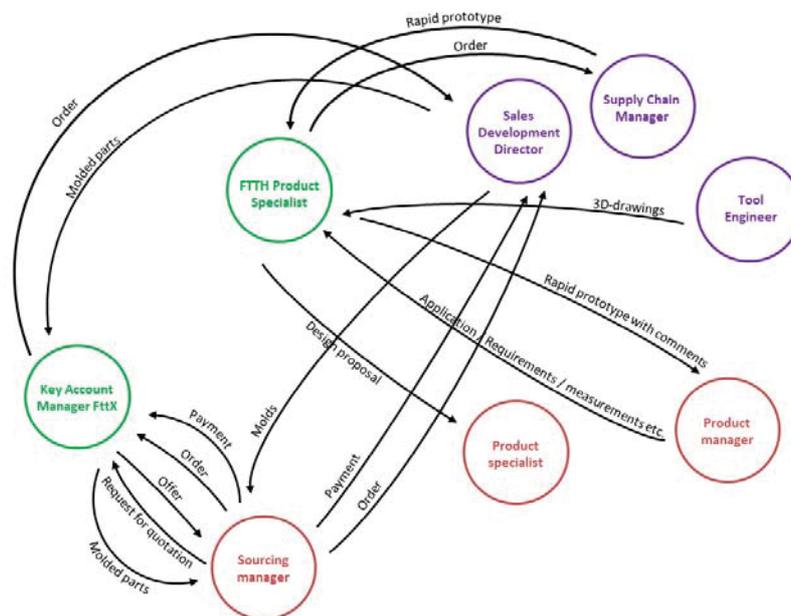


Figure 22. Roles of the participants without the intangibles.

The FTTH Product Specialist (in figures 19, 20 and 21) is clearly a ‘hub’ of value exchange in this system; this may be a threat to the coherence and balance of the value network and also limit the reciprocity. For example both the Supply Chain Manager and Tool Engineer would benefit from higher level of quality input of intangibles.

Impact analysis according to Allee (2003, loc 3218) answers the question “What are the tangible and intangible cost (or risk) and gains for each input for a particular participant?” In addition to expanding the scope of the value mapping more in-depth **impact and value creation analysis** are required in the future (see chapter 5). But again, if we can only see the tangible exchanges the impact and value creation analyses will have very little to offer. For example the input ‘design’ generates action and the response ‘3D-drawings’ from the tool engineer, but

doesn't increase his intangible assets, because the intangible assets are not recognized. Similarly the tool engineer could utilize his competences much more (and with no cost) and increase his value output to other participants.

4.3 Value network and the conceptual framework

The literature (chapter 2) supports the assumption of the conceptual framework (chapter 2.5) and shows the importance of intangibles as part of a strategy. The current literature clearly supports the 'onion model' (figure 15) presented as the conceptual framework. Corporate strategy (chapter 2.1) is about competitive advantages (chapter 2.2), intellectual capital (chapter 2.3) is a source of competitive advantages and the intangible resources and exchanges (chapter 2.4.1 and 2.4.2) visualized by the value network modeling and analysis (chapters 4.1 and 4.2) are the value creation tools of the intellectual capital.

Literature review peels through the 'onion' layer by layer from the 'crust to the core'. The research does this from the 'core to crust'. Rethinking value to include intangible value in the above customer project X with the help of value network modeling and analysis is able to gain awareness of the intangible resources, deliverables, transactions and exchanges introduced by the literature (mainly in chapter 2.4.1 and 2.4.2).

These intangible resources, deliverables, transactions and exchanges (chapters 4.1 and 4.2) are a clear evidence of human and relational capital (chapters 2.3.1 and 2.3.3), not managed, but existing. The sources of the intangible resources are the participants in the value network (chapters 2.4.1, 2.4.2 and 4.1). Their personal competences and knowledge form this human and relational capital (chapters 2.3.1 and 2.3.3) of the project and the business ecosystem in general. If supported by knowledge management this human capital will form long-lasting organizational capital (chapter 2.3.2).

Especially in knowledge based view (chapter 2.2.3) the source of the competitive advantage is organizational capital. As shown by the value network modeling, the customer is NOT buying only plastic injection molding molds and molded parts from Fibox, but also understanding of the application requirements, the design work of the molds and enclosures, including 3D-drawings and rapid prototypes. In addition to these intangibles that can quite easily be seen as tangibles (figure 21) a lot of other intangibles like materials knowledge, new ideas, possibilities/limitations of injection molding and process knowledge are exchanged with the customer. If these intangible resources are valuable, rare costly to imitate and exploited by the organiza-

tion they can be a sustained source of competitive advantage (Barney & Clark 2007, 70) (chapter 2.2.2).

And finally all the authors (Porter, Hamel and Markides) in their views on strategy list competitive advantage as one of the key components of strategy. Strategy should be build based on the ‘journey from the core to the crust’ of the conceptual framework.

4.4 Value network and the research questions

What is the ratio of tangible and intangible resources in the value network of a typical customer project in the Data Communication Networks – business segment?

As discussed above and visualized in figure 21 more than half of the transactions in the value network of the project X are intangibles. And the ratio is even bigger with the original assumption of “Customer is buying plastic injection molding molds and molded parts from Fibox” (figure 18).

Why is the role of the intangible resources in these value networks so important and even more important in the future?

As discussed in chapter 4.3 the assumptions from the conceptual framework both ‘from crust to the core’ (literature) and ‘from core to the crust’ (research) shows that the intangible resources can be a source of sustained source of competitive advantage. And the role of intellectual capital will be even bigger in the future.

How can these intangible resources be used to gain competitive advantage in this industry?

Strategic positioning attempts to archive sustainable competitive advantage by performing different activities or performing similar activities in different ways than rivals (Porter 2011, 1-2) (chapter 2.1.1) Product oriented organization are facing challenges because tangible resources are nowadays easy to copy and their value is declining (chapter 1). Fibox has more than 40 years of experience with enclosures. If a single customer project includes all the intellectual capital described in the value network in chapter 4.1 and 4.2, the assumption can be that the situation is the same in the rest of the organization (this of course needs to be studies (chapter 5)) and the intangible resources (intellectual capital) in the whole organization can be a source of sustained competitive advantage.

5 Conclusions and recommendations

The conclusion of the study is that the literature and the research seem to support the assumptions of the conceptual framework (chapter 2.5). The intellectual capital inside the organization and the intangibles exchanged and traded with the enclosure solutions can be a source of sustained competitive advantage if recognized, managed and utilized correctly.

The recommendation is that a presentation and a workshop on the topic and findings of the study will be organized. In addition the study should be distributed in the organization and studied not only by the 'core' of the organization, but also at the 'edges'. As stated by Allee (2003, loc 358) in chapter 2.4.1 "the center of power is shifting out to the edges and decisions are moving out from corporate headquarters to individual business units". Understanding the relationships of strategy, competitive advantages and intellectual capital is an obligation and privilege of everyone in an organization nowadays.

It is recommend that everyone should view themselves as a participant in a value network and think about at least the most important participants to them and think about the quality of their deliverables and demand quality from the deliverables they receive.

A lot of important things are outside of the scope of this study. First of all the value network should be extended outside of a single project. The recommend next step would be to extent it to cover the whole Data Communication Networks –business segment. This would allow deeper and more extensive impact and value creation analysis together with the exchange analysis and to study if the findings here are true on a larger scale. Instead observation, the participants of the value network should be included in the research and data collection. In the future research on the subject, to produce guidelines for best practices for the future, action research could be utilized (Denscombe 2014, loc 415).

The findings should be not only recognized, but also implemented as part of the strategy for the Data Communication Networks –business segment and later to the whole organization. According to Steward (2010, loc 1624) identifying tacit knowledge, making it explicit, encouraging this new knowledge to soak in and become tacit should be a never ending cycle. A recommendation is that similar movement between the 'core and crust of the conceptual framework onion' (figure 15) should also be a never ending cycle. Recognizing the importance of the intangibles as sustainable competitive advantage should shape the corporate strategy and vice versa the corporate strategy should guide the utilization of the intellectual capital and in-

tangible resources and this need to be a never ending cycle in order to truly gain SUSTAINABLE competitive advantage in the ever changing world.

The value network of a single customer project alone expands to include two parts of the Fib-ox organization and number of participants form the customer's organization. Participants from five countries with different segments of expertise. Product management is not the right approach because the concept of product management is too narrow. Product management should be developed to the direction of managing solution ecosystems to include the management of the value networks. Part of the future research should include the development of the solution ecosystem concept.

The conceptual frame work of the study and the 'onion concept' has been a great tool in my personal learning experience. The 'onion concept' has provided me with clear stepping stones though the literature. The way 'the layers of the onion' on each level has a clear path to the next topic in literature has help me to understand the relationship between the different topics.

Strategy, the first layer of the 'onion', ties the other layers together. Without competition there would be no need for competitive advantage and from that no need for strategy. On the other hand, in a competitive business world, the main 'strategy' of strategy should be to gain competitive advantage. I argue that with the work put on the study I'm now able to answer the question in chapter 2.1.1 "What is strategy?".

Stepping to the next level of the 'onion', from strategy to competitive advantage, helped me to understand the importance of finding a source of sustainable competitive advantage. Based on the literature studied and especially the knowledge based view, lead me to look into the intellectual capital as a source of competitive advantage. I strongly believe that knowledge and intellectual capital can be a source of sustainable competitive advantage even in product oriented business and perhaps especially in product oriented business when we are looking for valuable, rare and imperfectly imitable resources i.e. resources different from our competition. The literature helped me to understand the value of knowledge and the intellectual capital layer of the conceptual framework helped me to understand its place in the whole.

The search for intellectual capital was the reason to step deeper into the 'onion' to find the intangibles with value network modeling and analysis. Allee's *The Future of Knowledge* helped me to better understand the intangible resources, deliverables and exchanges and the

whole concept of value networks. Her tool to map and analyze the value networks is the key concept in the study and very useful skill also in the future.

The research shows the existence of the intangible resources, deliverables and exchanges in the customer project studied. The sources of these intangibles are clearly the human and relational capital of the participants and correctly managed they can be organizational capital for the Data Communication Networks –business segment in general. This intellectual capital can be a source of sustainable competitive advantage and should be clearly part of the strategy. My goal is to utilize this new knowledge for the strategy building of the Data Communication Networks –business segment.

Bibliography

Allee V. 2003. *The Future of Knowledge*. Butterworth-Heinemann.

Barney, J & Clark, D. 2007. *Resource-Based Theory*. Oxford University Press.

Blair, M & Wallman, S. 2001. *Unseen Wealth - Report of the Brookings Task Force on Intangibles*. Brookings Institution Press.

Dagnino, G. 1996. Understanding the economics of Ricardian, Chamberlinian and Schumpeterian rents. *International Review of Economics & Business*.

Creswell, J. 2014. *Research Design*. 4. ed. Sage.

Curado, C. 2006. *The knowledge based-view of the firm: from theoretical origins to future implications*. ISEG.

Curado, C & Bontis, N. 2006. The knowledge-based view of the firm and its theoretical precursor. *Int J. Learning and Intellectual Capital*.

Dahlman, C. 1979. The Problem of Externality. *Journal of Law and Economics*.

Hamel, G. 1997. *The Search for Strategy*. Strategos.

Harvard Business Review. 2011. *HBR's 10 must reads – On strategy*. Harvard Business School Publishing Corporation.

Kay, J. 1993. *Foundations of corporate success*. Oxford University Press.

Kim, C & Mauborgne, R. 1999. *Strategy, Value Innovation, and the Knowledge Economy*. *MitSloan Management Review*.

Levitt, T. 1960. *Marketing myopia*. *Harvard business review*.

Magretta, J. 2012. *Understanding Michael Porter*. Harvard Business Review Press.

- Marschan-Piekkari, R & Welch, C. 2004. Handbook of Qualitative Research Methods for International Business. Edward Elgar Publishing.
- Markides, C. 2004. What is strategy and how do you know if you have one?. Business Strategy Review.
- Nonaka, I. 2007/1991. The knowledge-Creating Company – Best of HBR. Harvard Business Review.
- O'dell, C & Hubert, C. 2011. The New Edge in Knowledge: How Knowledge Management Is Changing the Way We Do Business. Kindle Edition. Wiley.
- Porter, M. 2011. What is strategy?. Harvard business review. (Originally published in November 1996)
- Saunders, M & Lewis, P & Thornhill, A. 2007. Research Methods for Business Students. 4. ed. Prentice Hall
- Starovic, D & Marr, B. 2003. Understanding corporate value: managing and reporting intellectual capital. CIMA.
- Steward, A. 2010. Intellectual Capital: The new wealth of organization [Kindle Edition]. Crown Business
- Wiklund, J & Shepherd, D. 2003. Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. Strategic Management Journal.
- Williamson, O. 1981. The Economics of Organization: The Transaction Cost Approach. The American Journal of Sociology.

Value network modeling



Figure 17. Participants.

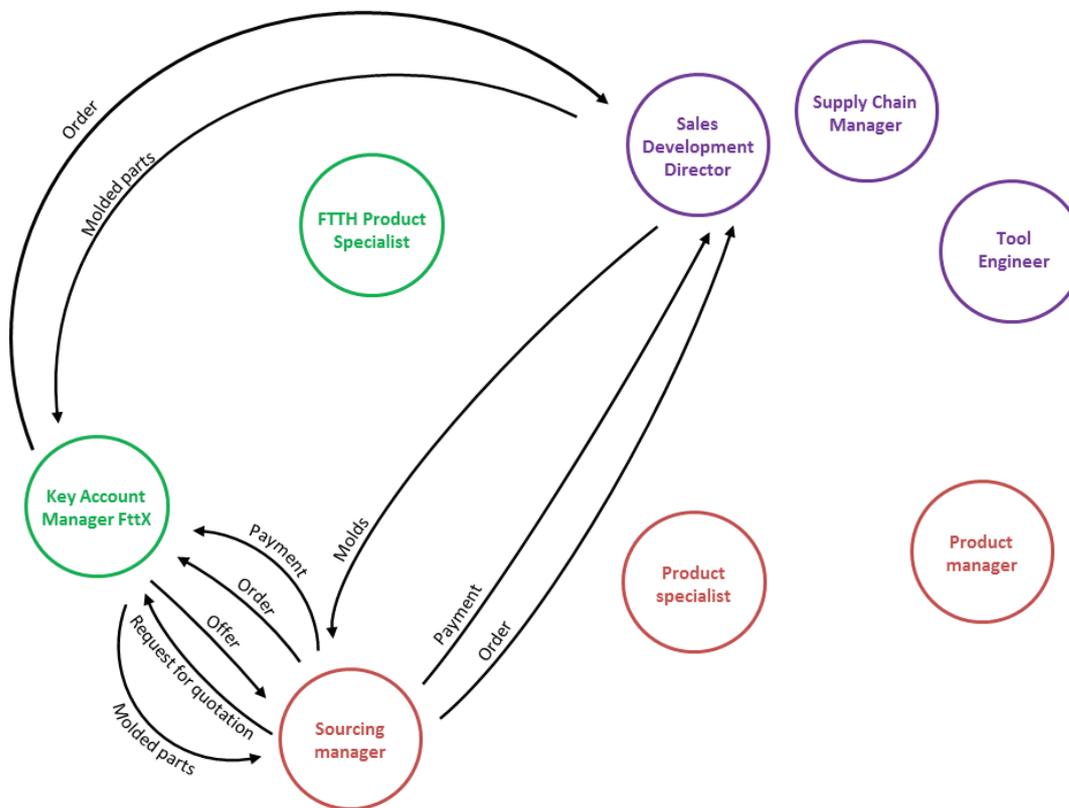


Figure 18. Tangible deliverables.

List of figures

FIGURE	DESCRIPTION	PAGE
Figure 1.	The five forces that shape industry competition.	19
Figure 2.	How the five forces impact profitability.	21
Figure 3.	The relative strength of the five forces and the industry's profit potential.	22
Figure 4.	The relationship between resource heterogeneity, immobility and sustained competitive advantage.	25
Figure 5.	Steward's ratio of intellectual capital to the value of physical and financial capital.	34
Figure 6.	Evolution of management thinking.	46
Figure 7.	Expansion of the focus of business.	47
Figure 8.	Deep shifts and translation.	48
Figure 9.	Continuum of complexity (three levels of practice).	53
Figure 10.	Model of intellectual capital.	55
Figure 11.	A whole-system view of value.	56
Figure 12.	Mapping the value exchanges.	59
Figure 13.	Three elements of Allee's HoloMapm diagram.	59
Figure 14.	A HoloMap diagram of exchanges in a network.	60
Figure 15.	Conceptual framework.	63
Figure 16.	The Interconnection of worldviews, design, and research methods.	64
Figure 17.	Participants.	71
Figure 18.	Tangible deliverables.	71
Figure 19.	Intangible transactions.	72
Figure 20.	Combined whole-system view.	73
Figure 21.	Part of the intangibles defined as tangibles.	74
Figure 22.	Roles of the participants without the intangibles.	75

List of tables

TABLE	DESCRIPTION	PAGE
Table 1.	The right mind-set for competition.	19
Table 2.	Competitive advantages arises from the activities in a company's value chain	23
Table 3.	The VRIO framework.	26
Table 4.	Summarizing the differences between Ricardian and Schumpeterian rent creation.	29
Table 5.	Steward's four quadrants of workforce.	37
Table 6.	Shifting foundations of economic thinking.	49
Table 7.	Shifting Worldview of organizational and managerial thinking.	50
Table 8.	A Common three-sector framework for intangibles.	55