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Knowledge Centric Management: A framework for organizational change, learning and innovation

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Abstract

Knowledge sharing and, consequently, organizational learning are considered crucial to innovative performance, yet knowledge as a strategic asset remains less understood and undervalued by firms. This thesis establishes a theoretical framework identifying four key components considered important for knowledge-intensive firms to thrive and improve innovative performance. Central to the study was evaluating to which degree the framework is relevant for firms seeking to improve their organizational learning and innovative capability.

The thesis employed a single-case study based on Plasto, a leading manufacturing company within injection molding in Norway. The proposed phenomenon being studied for this thesis is to what extents a knowledge-centric approach to management enhances organizational learning, and how organizational learning enhances a firm´s innovativeness and competitiveness. A qualitative research design was chosen to allow a nuanced understanding of the contexts related to how knowledge sharing and organizational learning can be improved by the aid of the proposed framework.

The study shows that Plasto is representative for the proposed conceptual framework of Knowledge Centric Management. However improvements are needed to ensure that enough resources are put into fertilizing knowledge and commercializing research conducted in partnerships. Plasto are nevertheless enviously transparent, showing extreme willingness to learn and actively focusing on improving collective competence in the firm. Knowledge Centric Management prospects a feasible and holistic framework for innovation. These are lessons and examples to be followed for other firms.

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1 Introduction

Scientia potential est
Knowledge is Power – Thomas Hobbes,
Leviathan 1668 (Hobbes, 1994)

At the time of this writing, centuries after Hobbes´ sentiment that knowledge is power, it is argued that we find ourselves in the era of the knowledge economy where intellectual property and experience have monetary values that often stretch beyond imagination (Heghe, 2011). In the very same era, automated manufacturing and new organizational processes is envisioned to strengthen companies to innovate and compete on a global scale. These types of advanced technological development are seen to be global and change the dynamics of the economy. Consequently, no firm can ever assume that their operations and competitive edge is stable. For Norway, the recent fluctuations in the oil- and gas industry signify the need for adaption to ensure that the economy of Norway and its welfare state is less dependent on oil and gas. Norway will be dependent on switching their resource exploitation elsewhere. It is here that producing new knowledge and intensifying learning processes is argued as a key source of upholding the welfare state in the future. As mentioned, knowledge and intellectual property have a stronger monetary value than before. The notions of knowledge economies, automated manufacturing and re-evaluating organizational processes sets the stage for the entwinement of knowledge, the management of it and its impact on organizational learning and innovation, which has been a theme in management academia since Ikujiro Nonaka established the discipline Knowledge Management.

Despite considerable academic contributions, there seems to be consistent disputes as to whether or not the concept of knowledge management and organizational learning can improve organizations innovativeness, not to mention arguments of whether knowledge management has any practical relevance and value at all (Aidemark, 2009; Alvesson & Karreman, 2001; Linger & Warne, 2001; Wilson, 2002). Efforts of knowledge management are nevertheless typically aimed at improving an organizations innovativeness, performance, knowledge sharing and organizational learning. Organizational learning, with knowledge generation as its primal objective, is argued to be the most important strategic responsibility of management to keep up with the competitive speed, global responsiveness and firm´s need to continuously innovate.

As the thesis´ title suggests, this paper argues for the concept of Knowledge Centric Management as an appropriate strategical effort for organizational learning and innovation. I have defined Knowledge Centric Management as the process of *administering internally and externally, explicit and tacit information and knowledge in a strategically and business oriented perspective*. One may argue that knowledge is a less understood and highly undervalued strategic asset, and it remains the purpose of this work to show how a Knowledge Centric Management approach enhances organizational learning and innovation for firms. The term Knowledge *Centric* Management emphasizes and recognizes knowledge as an integral ingredient to contemporary leadership and management of organizations. It underlines a way of thinking about management of business operations that places attaining and re-using knowledge as integral for learning in organizations. I attribute my personal inspiration to this particular terminology to the military doctrine of Network Centric Warfare which explores warfare in the information age and the competitive advantage gained through technological spread of information in networks of geographically dispersed troops (Berglund, 2004). Parallels can be drawn between Knowledge Centric Management and Network Centric Warfare, although this paper will not analyze or elaborate this particular comparison any further; it stands simply as the spark of inspiration for my thesis.

1.1 Thesis Outline

The thesis is divided into six chapters: Introduction, Theoretical Overview and Model Framework, Methodology, the Case Study, an Analytical Discussion, and finally, Conclusion. The entirety of chapter two will entail theoretical perspectives that outline the significance of knowledge management with regards to organizational learning, leadership, innovation and competitive advantage. The first section of chapter two provides an account for what knowledge is and what it means to manage knowledge. The concept of knowledge is viewed in light of philosophical contributions, following a distinction between two types of knowledge, tacit and codified knowledge, ending with a definition of knowledge. The second section of chapter two will review the role of knowledge management in innovation processes. The section uncovers how the management of knowledge influences innovativeness in organizations. Moreover, as we transition into the 4th industrial revolution, there is an increased pressure on organizations ability to change and adapt continuously. It is argued that successfully responding to technological advances can provide competitive edge. The third section covers the theoretical concept of the learning organization and the important

relevance of learning in the organization as they operate in an increasingly complex and uncertain economic climate. Managerial efforts to increase learning mechanisms in the organizations are theoretically presented. Lastly in chapter two, I introduce a new framework for Knowledge Centric Management, depicting its core characteristics and organizational process that may lead firms to become more innovative. Its four dimensions include; soft power management, the ecology of learning, spatial networks and fertilizing knowledge. They will all be introduced in more detail in the subsequent chapters.

In chapter three I present the design and methods used to collect data. Further, it demonstrates how the chosen methods are used to find qualified answers to the proposed research question and propositions. In this thesis I employed a case study research design with a single firm as a case. The case study is a manufacturing firm called Plasto, comprised of 42 employees[1], that specializes in injection-molded product development and production. The methods used were mainly interviews and direct observations, which is discussed in length in section 3.7. Representatives from both the management and employees were interviewed. Interviews were the main source of data collection, where both groups of informants were interviewed on topics such as leadership, learning in the organization, knowledge exchanging and networking. A further discussion on methodology, research design and limitations of the study is found in chapter three.

Chapter four is dedicated to presenting the data and empirical findings. The chapter introduces Plasto as a knowledge-intensive manufacturing firm and provides a historical background of the company from its inception in 1955 up until today. This is done on account of information provided during the interview with the Managing Director of Plasto and the book Plasto has published. The remaining six sections of chapter four uncovers all the data and empirical findings made in this research. The sections are divided thematically according to the topics that were laid forth in the interview guides, which includes managing and leading Plasto, knowledge and knowledge management, accessing and extracting knowledge in networks, learning in Plasto, and finally, perspectives and reflections of the informants on the future of Plasto with regards to maneuvering technological advancement, change and globalization effects.

[1] As of February 2016

In chapter five I analyze and discuss the empiricism I made through my research against the presented theory. The discussion and analysis draws on parallels between the theoretical framework and modelization of Knowledge Centric Management. The theoretical framework produced will be tested against the information and reflections attained from the informants.

In chapter six I present the conclusions and arguments made in this thesis. Moreover, the implications of the study will be discussed, following suggestions for further study with regards to the central arguments and theorization of the thesis.

1.2 Research Objective and Research Question

In this thesis I present a case study in which a Norwegian company, Plasto, is evaluated and analyzed within the theoretical framework of Knowledge Centric Management. The aim is to investigate how Knowledge Centric Management enhances organizational learning and innovation in firms. To shed light on this objective, the following research question is formulated:

To what extents can knowledge-centric approaches to management enhance organizational learning, and how does organizational learning strengthen a firm´s innovativeness and competitive advantage?

The research question depicts two central inquiries that are interconnected. The purpose is first to explore how management can facilitate improved learning to occur within a firm, and then explore how this might affect the firm´s innovative ability. Four propositions have been declared for this thesis, and can be found in section 3.3 of the Methodology chapter.

1.3 Concepts and Definitions

The purpose of this section is to give a brief overview of key concepts and definitions in the thesis. Firstly, knowledge management is not carried out for the sake of individuals or knowledge generation itself. For firms and organizations, private or public, the main objective of the processes of knowledge management is to increase profits and or, ideally, lead to organizations reaching their goals. Knowledge management is a strategy to which supports the managements objectives, and it serves as a mean rather than an end. But what exactly is

knowledge? In lack of a definitive definition, I have defined knowledge as such: *knowledge is information about the world that is cognitively embedded and applied to solve problems*. And how does it relate to management? Diffusing the term leads us to the central idea of knowledge management; that is*, the coordination of activities performed by knowledgeable workers so to effectively capture, share and (re)-use information and knowledge*. Furthermore, a *knowledgeable worker* is here defined as *anyone who for a living works with developing or using knowledge.* The thesis will argue that placing knowledge at the center of attention in management, and acknowledging that knowledge is an extremely important strategic asset, will improve the organizations ability to consistently re-new itself and increase innovative abilities. Henceforth, the thesis will introduce a theoretical framework for Knowledge Centric Management. This framework has four components, each of which will be elaborated on in this thesis; a) Soft Power Management, b) the Ecology of Learning, c) Spatial Networks and d) Fertilizing Knowledge. I have defined Knowledge Centric Management as to *administer internally and externally, explicit and tacit information and knowledge in a strategically and business oriented perspective.* I will argue that it aids firms to initiate change processes and organizational learning, which in turn may lead to better innovative capability and competitive advantage for firms.

2 Theoretical Overview and Model Framework

2.1 Introduction

As we entered 2016, NHO (The Confederation of Norwegian Enterprise) Director Kristin Skogen Lund stated that we stand on the verge of a new era where digital and technological change will disrupt and change industries and work routines (Østrem & Børringbro, 2016). She claimed that adaptation is the key for firms to thrive. Indeed, the word adaptation doubled in usage in Norwegian medias from 2014 to 2015 (Østrem & Børringbro, 2016). Change and adaptation are key attributes to innovation in firms, and testifies the relevance of this thesis in contribution to modern organizational and innovation theory. The following section will introduce some of the key concepts and theoretical stands on the subject of knowledge management and innovation. A theoretical framework that I have produced will stand as a platform for a continued discussion in chapter five, following the presentation of data in chapter four. To begin with, it is argued, "knowledge management is not an isolated phenomenon, but the most important cornerstone of our knowledge economy, sustained entrepreneurship, intellectual challenges, good management and innovation" (Heghe, 2011, p. 59). Furthermore, and as a starting point for this theoretical overview, "it is worth noting that less effort has been made in looking at the specific issue of capabilities, competencies and skills required to use socially embedded learning resources and the management of externalities. This is true especially in the context of the creative small and medium sized firms that are often celebrated as the main source for job creation through innovation" (Mitra, 2012, p. 138). Connecting the dots between knowledge management and learning in organizations may show how they might gain considerable competitive advantage. Since it is clear, both in Norway, the West and the broader world economies that we have moved into an interconnected, knowledge-based economy where information, knowledge and learning are key resources, managing these resources effectively should be of highest priority. Knowledge Centric Management is an effort to do just that.

2.2 Knowledge Management

2.2.1 Knowledge

Prior to exploring any deeper into the realm of knowledge management, a brief discussion is needed on the concept of knowledge itself. The study of knowledge, i.e. epistemology, has intrigued academics and philosophers for centuries. Plato saw knowledge as three-folded; knowledge as nothing but perception, knowledge as true judgment, and, finally, knowledge as a true judgment with an account (Chappell, 2005). Knowledge for Plato meant grasping ideas. It was a cognitive state in which knowledge was considered to be a belief or an opinion about something. Building from this, it is worth noting that where knowledge involves the cognitive possession of facts and conditions about something, wisdom is the practical use of knowledge. The human mind, demonstrated in Figure 1, consists of roughly 40 percent data, supplemented with 30 percent information, 20 percent knowledge, 10 percent understanding and hardly any wisdom which represents 0.001 percent of the human mind (Ackoff, 2011). Heghe (2011) distinguishes data and information, where data is meaningless information comprised of individual pieces of information that is a product of observation; whereas information is meaningful data, which implies that the meaning is found from what a person expresses through or derives from data.

Figure 1: From Data to Wisdom (Heghe, 2011, p. 15)

Building on the more classical perception of knowledge, a common distinguishment of types of knowledge is *tacit* (locally embedded and implicitly presented) and *codified* (commonly accessible and articulated) knowledge. A traditional perception of its distinction is that transfer of tacit knowledge requires a degree of co-presence or spatial proximity, while codified knowledge is ubiquitous and spatially agglomerated (Amin & Cohendet, 2006). In simpler terms, tacit knowledge involves knowledge we cannot tell as opposed to codified knowledge, which can be told. Certain types of knowledge require a degree of physical presence to become attainable to others; for example, a craftsman cannot necessarily describe the manual process of constructing a given object. It has to be physically and visibly demonstrated to the learner in a context of practice, i.e. the knowledge taught has a tacitly embedded form. Meanwhile, codified knowledge is diffusible and therefore somewhat universally accessible, i.e. the craftsman can *tell* the learner his expertise and does not rely on physical closeness to do so. The transfer of knowledge from one individual to another is therefore dependent on what type of knowledge is transferred. This is an important point in regards to learning, which we will return to in section 2.4.

The illumination of knowledge as a concept may never truly be unfolded and clearly manifested in one overarching theory. For that it may be too intangible. Relating to this thesis, it is precisely the intangibility of knowledge that is a problematic issue for the ones who manages in any sense of managing. Indeed, the entire concept of ´knowledge´ itself lacks clarity. Because there is no ultimate definition of knowledge, and for the purpose of this thesis, I have defined knowledge as such: *information about the world that is cognitively embedded and applied to solve problems*. Furthermore, in an organizational and business perspective, I have defined a knowledgeable worker as *anyone who for a living works with developing or using knowledge.*

2.2.2 Management and Managing Knowledge

Historically, "workers were non-accumulative, non-acquisitive and accustomed to work for subsistence – made to react appropriately through cash stimuli and discipline" (Dandeker, 1990, p. 178). In other words workers were seen simply as resources for management; in a de-humanized and mechanical sense, they were part of the materialistic stock that management stimulated and exploited. Management, then, was the practice of keeping the stock in order. In *Discipline and Punish,* the philosopher Michel Foucault analysed the development of

social control in western systems such as schools, organizations, prisons etc. The examination of hierarchical structures in prisons, and its reforms in disciplinary mechanisms, penalising and surveillance within prisons, became a foundation for organisational management theory and studies on control over individuals. The notion of 'docile bodies' that can be subjected, used, transformed and improved (Foucault, 1977), applied to management science, incepts the idea that workers are subjects to construction and moulding by men in power. Docile bodies are subject to learning, and the manager's role is focused on teaching these bodies techniques to consistently improve and evolve. It is what Foucault calls 'political autonomy' (Foucault, 1977). "The functionality of this notion is dependent on the appliance of three instruments; hierarchical observation, normalizing judgement and the examination of the two" (Foucault, 1977, p. 170). Foucault claimed that society lived under a disciplinary rule, where his illustration of a prison was merely a metaphorical example. Indeed, he explicitly demonstrated how the organization of prisons and firms were architecturally similar; in that closed environments and office spaces were replaced by open spaces, passages and transparencies (Foucault, 1977). In prison, this was seen where prisoners were allowed to roam in open space, guarded and overseen by stewards from central towers or positions. In organizations, open spaces and passages enables opportunities such as co-working and effective communication, but also provides management the power to continuously monitor and *see* their workers conducting work. Through these spaces, this type of observation and exercising control was naturalized according to Foucault. The mechanism that is employed as a result of these spaces is the notion of 'panopticism', which Foucault describes as following: "One is totally seen, without ever being seen; in the central tower, one sees everything without ever being seen" (Foucault 1977:201). The notion of docile bodies operating within a state of panopticism has become an ideal for economic, political and military institutions. This classical Foucauldian approach to control can be considered indirect through open space, and thus workers do not *feel* as though they are being watched. A design of space that is panoptic thus becomes a highly efficient way of managing a mass of subjects. It is a pastoral way of viewing management and discipline people, where the shepherd herds its livestock in the open field.

An emerging, contemporary approach for military command and control in the information age and in networked organizational structures is the so called *power to the edge* concept, which is changing the way individuals, organizations and systems relate to one another and work (Berglund, 2004). Power to the edge involves expanding access to information and

expertise and eliminating procedural constraints; it reduces the need for middle managers whose role is to manage constraints and control measures. Instead, commanders become responsible for creating initial conditions that make success more likely and exercise control by (Alberts & Hayes, 2003):

- Creating congruent command intent across the enterprise
- Allocating resources dynamically, and
- Establishing rules of engagement and other control mechanisms that the fighting forces implement *themselves*

In this way, a network-centric enterprise consist of empowered, interoperable, self-synchronizing entities that provides commanders with the capability to dynamically network (connect, share and collaborate) sets of battlefield components (Berglund, 2004). Indeed, in the past few decades, management theory has evolved and seen a shift from the more authoritative to a softer, network-centred and socio-cultural approach. Work is no longer seen as a painful obligation enforced on individuals, but as a vital means to self-fulfilment and self-realization; life in the entrepreneurial organization has a romantic quality (Gay, 1996). Others argue that capitalism in itself has undergone its own cultural turn; a turn based on the idea that business has to become more *knowledgeable* in a turbulent and constantly fluctuating world (Thrift, 1997). Analyzing the cultural value attributed to contemporary management theories, Thrift points to six different factors of capitalism´s cultural turn (Thrift, 1997, pp. 37-39):

> Firstly, it is not an ideology. Second, the discourse is not unitary and static in order. It is made up of multiple strands of practices, constantly changing as its proponent foster new conventions. Third, there has been a growth of numerous players in the international business world. Fourth, there has been a growth in differentiated production-consumption nexus, increasing the range and fickleness of many markets. Fifth, there has been a general speed-up in transportation and communications. Sixth, as a result of all these factors and more, national economies have generally performed less coherently, making it more difficult to predict economic outcomes.

It is these factors Thrift lists of the new knowledge economy that prompts the discourse of management in the direction of knowledge management. So what is the relation between knowledge and management? Many argue that knowledge has become the most central asset for organizations, competitive edge and economic growth (Drucker, 1969). Firstly it is worth noting that management implies a control over something. However, how does one pursue control of knowledge? Firstly, recall the definition gives which is central to the idea of knowledge management; that is*, the coordination of activities performed by knowledgeable*

workers so to effectively capture, share and (re)-use information and knowledge. Coordinating activities refers to the acts of managing and leadership. Further, knowledge development cannot necessarily be controlled, but rather, it must be supported and coordinated. According to Hans van Heghe, "working with knowledge has a three-folded meaning; a) creating information, b) using information and re-using knowledge, c) disseminating knowledge" (Heghe, 2011, p. 19). Given that all organizations possess an array of knowledge and information, it is important to know how to work with and manage knowledge in an effective matter. This involves, as Heghe describes, both creating information from knowledge bases available (internally and externally), but also using and re-using said information to create new material for the organization to use. It is the aim of knowledge management to effectively achieve this. Others have distinguished between two different approaches to managing knowledge. Hansen et.al. (1999) calls these two approaches *codification strategy* and *personalization strategy,* as depicted in Figure 2.

Figure 2: Codification vs. Personalization Strategy (Hansen, Nohria, & Tierney, 1999, p. 109)

Codification strategy involves codifying and storing knowledge in databases where it can be accessed and used easily by anyone in the company. In the second strategy, personalization strategy, knowledge is closely tied to the person who developed it and is shared mainly through direct person-to-person contact. The chief purpose of technology, according to Hansen et.al., is to help people communicate knowledge rather than store it. They argue further that a company must not isolate knowledge management. Whilst some CEOs put knowledge management on top of their agendas, others have not given it the same attention as cost cutting, restructuring or international expansion. Knowledge management functions best in coordination with HR, IT and the company´s competitive strategy. Moreover, strong

leadership is required to choose, implement, and overcome resistance to a new knowledge management strategy in a firm (Hansen, Nohria, & Tierney, 1999).

2.2.3 Assessing Knowledge Management

The concept of knowledge management is not without its critics. Key words that attribute ´knowledge´ include culture, learning, performativity and wellness; terminologies often associated with managerial ´mumbo-jumbo´ (Costea, Crump, & Amiridis, 2008). Some argue that it is a paradox in nature, a fad that will pass in time and nothing short of a Utopian idea of organizational culture (Aidemark, 2009; Wilson, 2002). The Utopianism is argued to lay in the ideas of an organizational culture in which the benefits of information exchange are shared by all, where individuals are given autonomy in the development of their expertise, and where 'communities' within the organization can determine how that expertise will be used (Wilson, 2002). Wilson (2002) further points to firms claiming that people are their most important resource, only to never show reluctance to rid themselves of that resource, and the knowledge it possesses, when market conditions decline. Another consideration is made with regards to firms letting people go so seemingly easy, and with that their resources, when Wilson asks; if getting promotion, or holding your job, or finding a new one based on the knowledge you possess, what incentive is there to reveal that knowledge and share it (Wilson, 2002).

Others have identified several problems with the popular understandings of knowledge and the management of it, including: " a) ontological incoherence, b) vagueness; c) an all-embracing and somewhat empty view on knowledge; d) objectivity and robustness; and e) functionalism" (Alvesson & Karreman, 2001, pp. 998-999). Knowledge management is here considered to be philosophically incoherent, confusing, vague and its very ideas are perceived as contradictory. Moreover, it is argued that few knowledge-workers in firms operate according to a handbook of scientific methodology, and these uncertainties make the impact of the ´knowledge-factor´ much less clear-cut in practice (Alvesson & Karreman, 2001). It is indeed worth noting that a knowledge management approach may not work for all organizations. The feasibility of its implementation may be highly dependent on the specific organizational factors such as style of management, leader characteristics, workers, culture characteristics etc. Knowledge management is said to have failed to deliver because those implementing knowledge management have retained a bureaucratic perspective of work as

performed by individuals in a formal organizational structure where knowledge is viewed as a static resource (Linger & Warne, 2001). Furthermore, Linger & Warne (2001) argues that as long as organizations retain this perspective, the real nature of knowledge work remains hidden, and thus inaccessible to those who are trying to improve organizational outcomes through knowledge management practices.

Despite its many criticisms, it has also been noted that the lack of success of traditional knowledge management initiatives highlights the need to adopt approaches that are informed by concepts derived from complexity theory, learning, action and other theoretical positions that explicitly address complexity (Crawford, Hasan, Warne, & Linger, 2009). Indeed, discrediting knowledge management and its capacity to aid organizations effectiveness entirely, is unwise. Tracing the conceptuality of knowledge management back to the earliest academic contributions, we must take note that in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge (Nonaka, 1991). With such a profound pillar of truth to ascribe the contemporary economic world, it can be argued that knowledge indeed is a strategic asset *de facto*; it has to be managed by organizations like any other asset. Any enlightened actor of management must realize that knowledge is a doctrine too important to be left to chance. It needs attention, addressing, strategizing, organizing, tailoring, and implementing as much as any other doctrines of management and business administration. Moreover, it may stand as a remarkably important factor of innovation.

2.3 The Role of Knowledge Management in Innovation

Having introduced knowledge, the management of it and its importance in the business sphere, we move to explore knowledge management´s relationship with innovativeness of organizations. Building from early 20th century economic theory, the Schumpeterian view of innovation suggests, quite accurately, that innovations in economies and markets do *not* take place in such a way that new consumption needs and desires spontaneously first arise in consumers, followed by a response by the production apparatus. Instead Schumpeter claimed,

> It is the producer who as a rule initiates economic change, and consumers are educated by him if necessary; they are, as it were, taught to want new things, or things that differ in some respect or other from those which they have been in the habit of using (Schumpeter, 1934, p. 49).

The ´magic´ of true innovation therefore is not dependent on the end-recipient of a particular new creation; it is largely embedded in the creators and distributers ability to produce new creations. This process constitutes to what Schumpeter a decade later called ´creative destruction´, which is "the revolution of the economic structure *from* within, incessantly destroying the old one and incessantly creating a new one" (Schumpeter, 1943, p. 83). Innovation is thus embedded in the creator´s ability to *creatively destruct*. Moreover, as others argue, innovation requires knowledge spillovers, the process by which knowledge is transferred or diffused into a new domain or context and is consequently applied (Steen & Hansen, 2013). This implies that innovation is dependent on the use and re-use of knowledge. Metaphorically speaking, knowledge is the water flowing in rivers, streaming in directive cycles confined by management.

As it were, if knowledge spills is posed as a pre-requisite for innovation, facilitating flows of knowledge becomes a craft of management. It is here that one can argue that knowledge is a central pillar of management that will influence innovation. Economist Friedrich Hayek addressed knowledge as a socio-economic issue half-a-century ago, declaring,

> We must show how a solution is produced by the interactions of people each of whom possesses only partial knowledge. To assume all the knowledge to be given to a single mind in the same manner in which we assume it to be given to us as the explaining economists is to assume the problem away and to disregard everything that is important and significant in the real world (Hayek, 1945, p. 530).

Much in line with Ikujiro Nonaka´s framework for knowledge-creating companies, knowledge is an organizational asset so stable and influential in development and innovative processes, that neglecting may have severe detrimental effects. As reflected by Nonaka,

> When markets shift, technologies proliferate, competitors multiply, and products become obsolete overnight, successful and innovative companies are those that consistently create new knowledge, disseminate it through the organization and embody it in new technologies and products (Nonaka, 1991, p. 96).

Nonaka strongly suggests that knowledge is an integral tool for creative economic and innovative solutions. Furthermore, technological advances, particularly in the past decade, have increasingly put pressure on how firms operate. Business models and practices will need continuous changing the further technology development grows.

2.3.1 The 4th Industrial Revolution, Technological Disruption and Change in Business

The classical economist John Maynard Keynes once wrote that we are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come – namely, *technological unemployment*. This means unemployment due to our discovery of means of encompassing the use of labor outrunning the pace at which we can find new uses for labor (Keynes, 1930). Keynes´ proposition 86 years ago is astonishingly relevant today, so much that it might as well had been a direct quotation from a passage written by a 21st century economist. Indeed in 2016, we are on the verge of a 4th industrial revolution where automation, data exchange and manufacturing technologies will change transform industrialization into being "smart" (Bloem, J. et.al., 2014). The idea of the 4th industrial revolution, or Industry 4.0, is widely accepted by companies, research institutes and universities, although a generally accepted definition of it does not exist. Moreover, the most fascinating part of the 4th industrial revolution is that for the first time an industrial revolution is predicted a-priori, as opposed to being observed ex-post (Hermann, Pentek, & Otto, 2015; Drath & Horch, 2014). The term "Industrie 4.0" arose in Germany, and the Germans have actively engaged in changing their way of thinking in terms of integrating companies, research institutes, government and universities as a collaborative union working towards actively shaping and molding the future. The implications of the 4th industrial revolution are provided by Hermann et.al, where they demonstrated a set of design principles for Industry 4.0:

	Cyber-Physical Systems	Internet of Things	Internet of Services	Smart Factory
Interoperability	X	X	X	X
Virtualization	X	-	-	X
Decentralization	X	-	-	X
Real-Time Capability	-	-	-	X
Service Orientation	-	-	X	-
Modularity	-	-	X	-

Figure 3: Design Principles of Industry 4.0 (Hermann, Pentek, & Otto, 2015, p. 11)

The Principles of Industry 4.0, as shown in Figure 3, provides a set of key implications and concepts that companies have to embrace. The most critical elements relevant to Knowledge Centric Management in manufacturing firms are interoperability, i.e. workpiece carriers, assembly stations and products are able to communicate with each other through open nets

and semantic descriptions; decentralization, i.e. central planning and controlling are no longer needed; and finally modularity, i.e. modular systems able to flexibly adapt to changing requirements by replacing or expanding individual modules (Hermann, Pentek, & Otto, 2015). In summary, the Industry 4.0 encompasses trends such as digitalization, robotization, artificial intelligence, the Internet of Things and cloud systems. Moreover, the Industry 4.0 will bring about new products, new value chains and business models. It is worth drawing parallels to the current and previous industrial revolutions. Indeed, the original industrial revolution was not only a simple matter of replacing muscle with steam; it was a matter of reshaping jobs themselves into precisely defined components that steam-driven machinery needed [namely, skilled and unskilled workers who served as caretakers for machines] (The Economist, 2014). Equally so, the firms and workers of the 4th industrial revolution will be forced to change and adapt once more to sufficiently encompass the technological developments.

The classic 20th century corporation remains the dominant way in which firms are structured. The theoretical rationale for this is simple: as companies grow, they rely more on a hierarchical structure to delegate tasks effectively. This core structure is being challenged by technology developments that alone are certain to have major implications for business models, organizational structures, the nature of jobs, the workplace and how companies interact with externalities (The Economist Intelligence Unit, 2012). However, contrary to common perception, technology itself is rarely the source of major new business disruptions. It is organizations ability to combine changing technology with new business models that enables them to outperform rivals. Indeed, "innovations in processes and methods are arguably more vital to business model change than innovations in technology" (The Economist Intelligence Unit, 2012, p. 10). One of the major technological disruptions firms face is, as discussed above, increased automation. The productivity gains from automation are far too great for firms to ignore, as it allows organizations to create *more* output using *less* input. This should be encouraged even, as it is economically efficient both for the individual firm but also the economy as whole in terms of more high-efficient productions. However, increased automation has direct implications on people´s jobs and work tasks. Reports show that the number of jobs created per unit of economic growth is smaller than in the past (The Economist Intelligence Unit, 2012). In other words, employment growth is increasingly detached from economic growth, largely due to the fact that machines displaces current tasks which humans are employed to do. This is not to say that humans will be out-competed by

machines and left displaced and out of work; but rather, as automation displaces certain jobs, entirely new occupations are likely to be created. Smart assistance systems release workers from having to perform routine tasks, enabling them to focus on creative, value-added activities (Hagermann, Wahlster, & Helbig, 2013). Indeed, future workforces are likely to find that their jobs and specializations are categorized by greater flexibility, independence and empowerment that will inevitably compensate for the loss of previous jobs due to automation. In view of the impending shortage of skilled workers, this will allow older workers to extend their working lives and remain productive for longer. "Flexible work organizations will enable workers to combine their work, private lives and continuing professional development more effectively, promoting a better work-life balance" (Hagermann, Wahlster, & Helbig, 2013, p. 5).

2.3.2 Automated Manufacturing, Adaptation and The Competitive Edge

As was mentioned in the introduction and discussed above, automated manufacturing and new organizational processes is believed to strengthen Norwegian companies to innovate and compete on a global scale in the future (Gulbrandsen-Dahl, 2015). Automated manufacturing and new organizational processes are interdependent. As technology advances, and production increasingly become more technologically dependent, it has dramatic effects on organizational processes and work routines. An increase in technological production implies that production is more cost-efficient, flexible and swift. On the flip side, it tends to replace low-skilled labor and often relies more on high-skilled labor. Workers in industries such as logistics, transportation, accountancy and medicine are becoming increasingly exposed to technology taking over their work responsibilities (Østrem & Børringbro, 2016). Self-operating production systems, trains without designated drivers, computing systems handling bookkeeping of the firms financials, medical machines that can provide a diagnosis on a patient much more rapidly than a doctor, are examples of technological advancements that to some effect removes the need for labor. This has clear economic advantages in terms of costs and efficiency, but is unfortunate for labor (Østrem & Børringbro, 2016). Indeed, increased automation can contribute to long-term structural unemployment, meaning unemployment is permanent as a result of as fundamental shift in the skills needed by an economy (Lennard, 2013). That is not to say that a large pool of the total labor stock in an economy will remain unemployed. History shows, as evident by the three previous industrial revolutions, that the lesson is rather that if advances in technology are playing a role in increasing unemployment

and labor inequality, the effects are not inevitable, and they can be altered by government, business, and consumer decisions. Indeed it has been suggested that social construct, rather than technology, determines how technological advancements affect work (Rutman, 2015). Advanced technological development is seen to occur on a global scale, and it changes the dynamics of how firms produce and operate. How we socially respond, adapt and construct to these changes determine the degree in which it affects labor and unemployment. Given the state of matters elaborated on above, we are dependent on firms, government and education institutions to increase focus on knowledge. Some argue that we now see firms compete in a world cup where competencies, what knowledge firms possess and how firms use it are vital for the survival of the firm (Østrem & Børringbro, 2016).

From a business perspective, successfully responding to technological advances can provide competitive edges. Organizations derive competitive edge by being superior in efficiency, that is, in constantly restoring and improving its routines (Basadur & Gelade, 2006). A knowledge-centric approach intends to continuously improve and change routines. Bassadur & Gelade argues that few organizations have the skills or expertise to effectively engage in innovative abilities and creative aptitudes of all their employees. However, they propose that for knowledge management to effectively influence the ability to innovate, organizations must establish a process that combines the *apprehension* of knowledge (understanding) with the creative *utilization* of such knowledge (Basadur & Gelade, 2006). The outcome is that knowledge management and organizational creativity becomes integrated into one piece – the thinking organization. Their proposition to achieve this consists of four stages:

> Stage 1 is the proactive acquisition and generation of new formation, and the sensing of trends, opportunities and problems. Stage 2 is the conceptualization of new challenges and ideas. Stage 3 is the development and optimization of new solutions, and Stage 4 is the implementation of the new solutions (Basadur & Gelade, 2006, p. 49).

Forcing through these stages require an array of managerial strategic components, where it is the purpose of the Knowledge Centric Management framework in section 2.5 to highlight some key strategic components. A brief account is given here. Proactively sensing trends, opportunities and problems (stage 1), would require the organization to tap into externalities outside the organization using the concept of spatiality and external exchanges of knowledge and information (see section 2.5.3 on spatial networks). Conceptualizing new challenges and ideas (stage 2) depends on the soft powered management, management´s vision and its

cultural set-up (see section 2.5.1). Developing and optimizing new solutions (stage 3) is very much related to knowledge creation and the use and re-use of information (see section 2.5.2 on the ecology of learning). Finally, the implementation of new solutions is rather the end-result or ´product´ of the organizations process concerning Knowledge Centric Management.

2.3.3 The Relationship Between Knowledge Management and Innovation

There are strong indications that there is a significant and positive relationship between knowledge management practices and innovation performance. For instance, it is suggested that organizations should strive for an integrated approach to knowledge management in order to maximize innovation performance, which leads to competitive advantage (Terziovski, 2004). Specifically, "the most significant implication from the study is that managers in manufacturing firms should place more emphasis on HRM-practices when developing innovation strategies for product and process innovations" (Terziovski, 2004, p. 408). It was shown that knowledge management contributes to innovation performance when a simultaneous approach of "soft HRM practices" and "hard IT practices" are implemented (Terziovski, 2004). Other studies seem to be aligned with these assertions. It has been suggested that effective knowledge management supports the conversion of other resources into capabilities; and since capabilities underpin the long run survival of a firm, firms with effective knowledge management behaviors and practices are likely to make better use of resources and so will exhibit superior outcomes such as more innovation and superior financial performance (Darroch, 2005). The research found that "knowledge management components had a direct effect on innovation, but only partial effect on financial performance" (Darroch, 2005, p. 112). These results connect the relationship between knowledge management and innovation, and are imperative because they confirm the theory laid forth by Nonaka in *The Knowledge-Creating Company*. These contributions henceforth establish the relationship between knowledge management and innovation, in that they found firms capable in knowledge acquisition, knowledge dissemination and responsiveness to knowledge to be more innovative than those firms who were not as capable. Despite perhaps only having limited effects on financial performances, research support the claim that it is conceivable that knowledge management enhances innovation.

2.4 Organizational Learning

The concept of the learning organization is increasingly relevant to modern management because of the increased complexity, uncertainty and rapidity of change in organizational environment (Malhotra, 1996). Indeed, one of the great challenges for modern organizations is that many issues are far too complex for small groups. Critical knowledge that may be needed to solve such issues is dispersed among a larger quantity of people within the organization. The key to solve this may lie in improving learning by increased inter-connectedness and closeness between people within the organization and through inter-firm relationships. This section will outline ways to create learning capabilities in organizations.

2.4.1 Learning and Trust in Industrial Networks

How can organizations design a system capable of learning? In his book *Images of Organizations*, Gareth Morgan claims that all organization and management theory is based on metaphors that lead us to understand situations in powerful yet partial ways. One of Morgan´s metaphors unfolds that of the ´organizational brain´; organizations are information systems, communication systems, thereby we can allow ourselves to think of them as information-processing brains (Morgan, 1998). Morgan uses the interdisciplinary science of cybernetics, the study of information, communication and control, to enlighten the challenges organizations face of constantly learning, but more importantly, learning to learn. He distinguishes between two types of learning, single-loop and double-loop learning, seen in Figure 4.

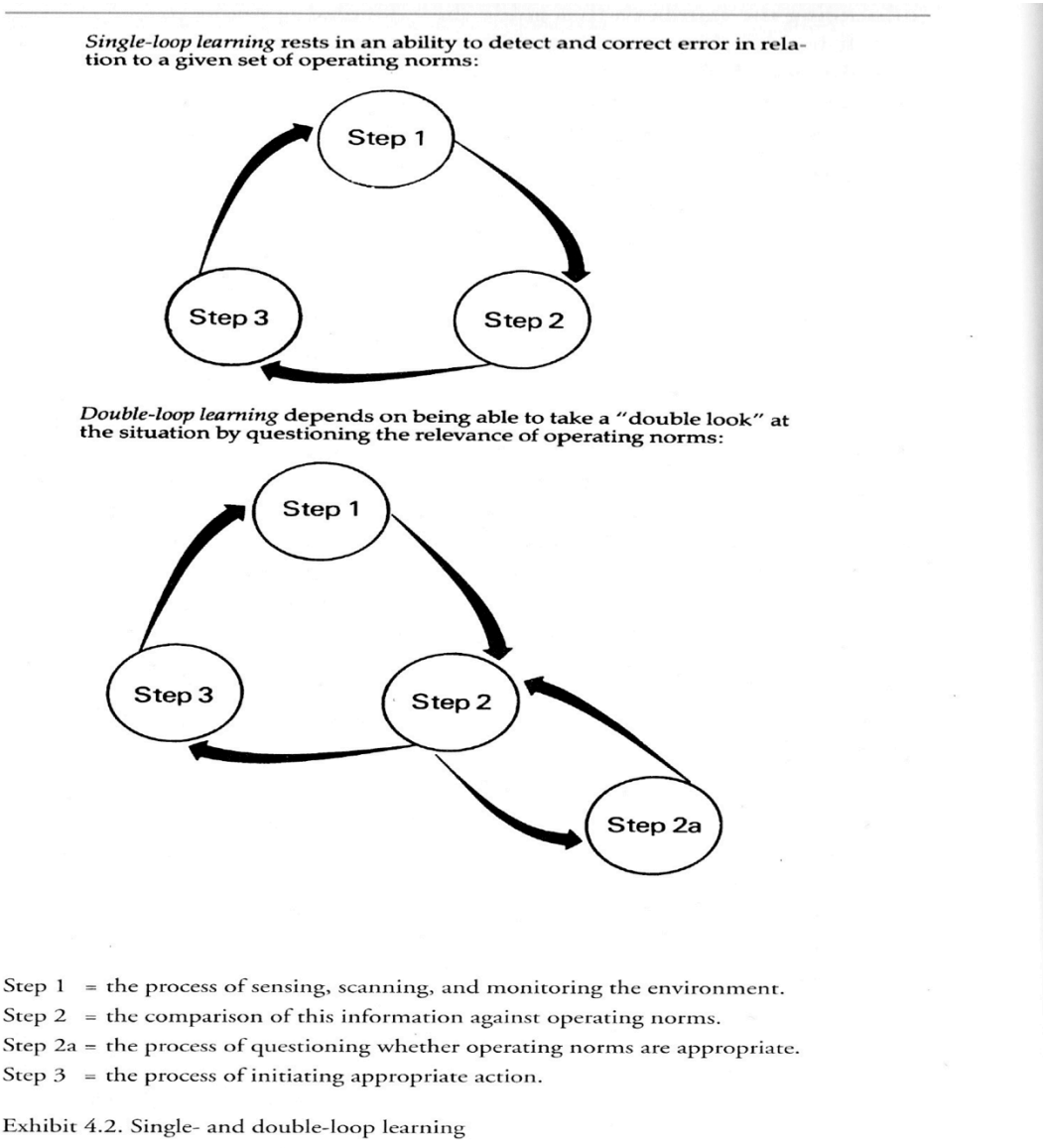

Figure 4: Single and Double Loop Learning. In *Images of Organization* (Morgan, 1998, p. 80)

Single-loop learning is the ability to detect and correct error in relation to a given set of operating norms; double-loop learning is the ability to take a "double look" at the situation by questioning the *relevance* of operating norms (Morgan, 1998). Taking that double-look, is what constitutes to learning to learn, and Morgan calls it "questioning the appropriateness of what they are doing". We can make a distinction between learning and learning to learn using a simple cybernetic system like house thermostats as an example. Thermostats are able to learn in the sense of being able to detect and correct deviations from predetermined norms, but they are unable to *question the appropriateness of what they are doing*. As Morgan illustrates, "a thermostat detects and corrects room temperature, but is unable to determine

what level of temperature is appropriate to meet the preferences of the inhabitants of a room and make adjustments on account of this" (Morgan, 1998, p. 78). His main argument is that more complex cybernetic systems, like the human brain, have this capacity to question the appropriateness of what they are doing. This ability to question what one does is what defines systems that are able to learn and self-organize. The principles of modern cybernetics provide a framework for thinking about how organizations can develop their capacity for learning. To enhance their capacity to learn, organizations must (Morgan, 1998, p. 82):

- scan and investigate change in the wider environment to detect significant variations
- develop an ability to question, challenge and change operating norms and assumptions, and
- allow an appropriate strategic direction and pattern of organization to emerge.

Organizational learning is also said to rely on externalities, i.e. partnerships and collaborations between firms in a shared community. There has been considerable scholarly interest in collaboration among firms. The motives for this upsurge of cooperative competition are perceived as strategic: risk sharing; access to markets; technologies; complementary skills; shortened innovation cycles; and enhanced learning (Powell, 1996, p. 51). Powell depicts four types of network-based collaboration, including; Industrial Districts, Research and Development (R&D) partnerships, Business Groups, and finally Strategic Alliances and Collaborative Manufacturing. He makes the argument that the common denominator for these network collaborations to function, is trust (Powell, 1996). The first network, industrial districts, is recognized for being socially integrated, small-scale, decentralized production units. Within a region, firms specializes in product(s) congregates in a specific area, serving to link industry and region closely. Work, here, is carried out through extensive, collaborative, subcontracting agreements (Powell, 1996). The second network, R&D partnerships, are membership communities in scientific or industrial associations that are ongoing and occurs outside of commercial relationships. Consequently, members observe how individuals behave and learn about their reputations (Powell, 1996). The overarching achievement of R&D partnerships, is that innovation lies an the interstice of firms´ knowledge and when R&D networks bring firms together, sharing different competencies generates new ideas (Gadde & Håkansson, 1992). The third network, Business Groups, is a network of firms that collaborates over a longer period of time. The most successful instances of business group networks are found in Japan, referred to as *keiretsu*, meaning literally societies of firms

(Powell, 1996). Japanese industries and their network practices have been vastly successful, due in large part for characteristics such as reciprocity, obligation, common membership, opportunity and vigilance (Powell, 1996). The fourth and final network is Strategic Alliances and Collaborative Manufacturing, which typically emerge out of mutual dependencies. "Strategic alliances are formed to share information and produce innovation, however they differ from R&D networks in their level of intensity; strategic alliances seldom transfer information of the same depth or a proprietary as R&D collaborations" (Powell, 1996, p. 60). The challenge of these collaborative partnerships is that as the involvement of a firm in a web of relations increases, calculating strategies and interests become much more complex, leading to the question; is it possible to be simultaneously strategic and cooperative? According to Powell, it all comes down to trust; and "trust, is neither an outcome derived from calculation or a value traced to culture; trust should be recognized as something neither chosen nor embedded, but instead learned and reinforced, hence it is an ongoing interaction and discussion" (Powell, 1996, p. 61).

2.4.2 The Role of Architecture on Learning Effects

Building from the previous section, Nonaka notes that the centerpiece of the Japanese approach to management is the recognition that creating new knowledge is not simply a matter of processing objective information. Rather, "it depends on tapping the tacit and often highly subjective insights, intuitions and hunches of an individual employees and making those insights available for testing and use by the company as whole" (Nonaka, 1991, p. 97). To create new knowledge is, according to Nonaka, to re-create the whole company and everyone in it in a non-stop process of personal and organizational self-renewal. One manner to facilitate this process of personal and organizational "self-renewal" is through physical architecture. Architectural elements of workspaces and office landscapes can have positive implications on corporate culture, learning and consequently, its innovative success. The meaning of architecture here does not merely relate to the physical construction of buildings and workspace. Rather, the architecture of work encircles the *appearance* of it; it refers to the entire work *environment* in which management creates using physical spaces, managerial techniques and pedagogy. As some have noted, office spaces are now designed to maximize learning through providing the apparatus for much more face-to-face interaction (Duffy, 1997).

What we see is a design logic in office spaces that moves away from the old "hive" and "cell" spaces, based on institutionalized processes, and toward integrative "club" spaces that help generate transactional knowledge via interactive group work and connected team projects (Thrift, 2000). These geographies and architectural outlay of offices constitute a new way of *doing* work. It is an environment that seeks to enhance ways to enhance interaction among co-workers, allowing them to share information and engage in interactive knowledge exchanges with great pace. "New means of producing creativity and innovation are bound up with new geographies of circulation that are intended to produce situations in which creativity and innovation can, quite literally, take place" (Thrift, 2000, p. 685). Lippman (2010) refers to a so-called responsive design approach, describing the relationship and interactions between a learner and the environment. It is noted that such an approach understands the transactional relationship between learners and their learning environment, and how the learning environment – social and physical – can contribute to the development of the learner. Lippman further states that not only does the responsive approach value research on how the learning environment functions, but it also embraces a process that promotes a "culture of inquisitiveness". With these perspectives, we can argue for how space itself and the *architecture* of space can facilitate learning and knowledge exchanges. Moreover, it allows people to transfer and tap into the tacit knowledge so hard to otherwise access. Hence, such specific architectural design on organizational environments creates the ecology of learning at work, which is one of the components of the Knowledge Centric Management framework.

2.4.3 The Cultural Invocation of Management

Above we examined architecture and its influence on organizational learning. Some have called for an organizational 'habitus', in which 'therapeutic' techniques and tactics are applied to establish a dynamic culture in which the subject continuously works upon it to become a better 'human resource' (Costea, Crump, & Amiridis, 2008). Daniel Bell, in *Cultural Contradictions of Capitalism,* argues "through development of this kind of culture, the search for independence, the will to be free not only of the patron but *all* conventions, finds its expression in modernism and, in its extreme form, in the idea of the untrammeled self" (Bell, 1979, p. 16). This is the fundamental thought-process for which modern architectural organizational structures are based upon. "The ´therapeutic habitus´ is management´s invocation of the self and subjectivity (as objects to be cultivated, developed

and enhanced by releasing their full ´human resourcefulness´´), and it portrays work as an order of therapy *sui generis*" (Costea, Crump, & Amiridis, 2008, p. 677). It creates a kind of culture in which fellowship, trust, co-operation and to work on ´oneself´ are key values. In so doing, managers establish an environment in which their employers are self-governing. They are provided the freedom to tackle work problems together, and individually, in a manner that appeals to *them*. Work, then, becomes a form of personal exploration. It sets a cultural stage for which the individuals can go about their business in their *own* way. As such they do not feel negligible or oppressed under the palms of a 'superior', which tends to be self-destructive for companies as people's motivation begins to diminish. The focus turns to the self.

Paul Heelas, in *Work ethics, soft capitalism and the 'turn to life'*, speaks of the self and the self-culture where the self as a self which considers itself to be something more, something 'deeper', more natural and authentic; the self as a self which has to work on itself to enrich and explore itself (Heelas, 2002). It is important to think about the slow removal of conventional office space, in replacement of unconventional conceptions such as hubs, open space and collaboration, as a natural and reasonable change in management. The origin of the word company comes from the Latin word 'companio', meaning companion, friend or partner. In its original meaning, company is not an analogy for firms or ´corporativeness´; it meant togetherness or fellowship. In the assemblage establishing what we refer to as a corporation, then, how else should it conduct work but through architecture and cultural values which allow its people easy access to each other? Indeed, "one of the great slogans of soft capitalism is the bringing of life back to work, or, the cultural turn to life" (Heelas 2002:14).

Psychologist Carl Rogers, in his book *Freedom to Learn*, speaks of creating a climate in which subjects can be free and direct themselves in their assignments. Rogers based his theory of learning on the principle that the teacher took on the role as a facilitator of learning, and explored his theory when teaching his students. By 'psychologically setting them free', he says, curiosity is unleashed (Rogers, 1969). He took on the role of mentoring his students as they proceeded in their studies; specifically, the approach taken was creating a person-to-person relationship, one he calls client-centred therapy (Rogers, 1969). He found that in applying this notion on his students, they were working twice as hard with free boundaries as what they would have if requirements were set according to his authority as the professor (Rogers, 1969). The creation of a *person-to-person relationship*, in Rogers´ intent, implies

that the notion of superiority and inferiority between the people and their superior are breached. Bureaucratic control is removed and ranks of authority seize to the minimal; instead flourishes the idea of the wise *developing* the less wise with appliance of mentoring and teaching. The environment created is one of comfort, positivity and openness. Moreover, relationships are generally built upon mutual trust and respect. Through this mutual understanding, all subjects within the relationship will earn a sense of credibility, making them influential as a result. In an organizational perspective a worker will be able to influence the manager, and the manager will be able to influence the worker. This is essentially what constitutes Heelas´ notion of bringing life back to work and it provides the organization the freedom to learn within their habitus, in a ´therapeutic´ manner as suggested by Costea et.al. Or, in the words of Ricardo Semler, the CEO of the Brazilian company Semco,

> A company should trust its destiny on its employees. Forget capitalism, socialism, salary surveys etc., and concentrate on building organizations that accomplish the most difficult of all challenges: to make people look forward to coming to work in the morning (Semler, 1993, p. 233).

2.5 Knowledge Centric Management: A Theoretical Framework

In modern economies, firms are major, albeit by no means unique, repositories of knowledge. Individual organizations embody specific "ways of solving problems" that often replicate in other organizations or even within the organization itself. Dynamically, "technological knowledge is modified and augmented partly within firms, and partly through interaction with other firms (competitors, users, suppliers, etc.) and other institutions (universities, technical societies, etc.)" (Dosi, 1998, pp. 127-128). Furthermore, when management is convinced that knowledge, information and the nurturing of their employees´ self are important ingredients of growth for the organization, it is strongly recommended by some that this be incorporated into personal and team targets in the organization (Heghe, 2011). This section will introduce a theoretical framework for Knowledge Centric Management.

Firstly, I have defined the process of Knowledge Centric Management to *administer internally and externally, explicit and tacit information and knowledge in a strategically and business oriented perspective.* One must note that Knowledge Centric Management is largely about human behavior and organizational structure and processes. It has relational and pedagogical elements to it and underlines a way of thinking about firms and organizations that

emphasizes continuous treatment of knowledge externally and internally for enhanced innovation capabilities. It is not a one-fit-all, unitary scheme for organizational strategy; rather, it is a strategy that must be implemented in a tailored fashion to each organization. As mentioned earlier, the paralleled theory of Network Centric Warfare focuses on the combat power that can be generated from the effective linking or networking of the warfighting enterprise (Berglund, 2004). It shares the characteristics of "the ability of geographically dispersed forces (consisting of entities) to create a high level of shared battlespace awareness that can be exploited via self-synchronization and other network-centric operations to achieve commanders´ intent" (Alberts, Garstka, & Stein, Network Centric Warfare, 1999, p. 88). Similarly, the importance of effectively linking information and dispersed entities, finds its relevance in contemporary firms coping with a fast-paced changing business world. As some have rightly observed, many firms now live in a permanent stage of emergency, always bordering on the edge of chaos (Thrift, 2000). The chaos referred to here is the increasing pressure on organizations to produce and innovate in order to meet an ever-hungry demand from customers. Thrift further suggests that,

> Through a variety of devices such as cultivating knowledge workers, valuing teamwork, organization through projects, flattened hierarchies – they will generate just enough organizational stability to change in an orderly fashion and sufficient hair-trigger responsiveness to adapt expectedly unexpected (Thrift, 2000, p. 674).

It is this line of thought that leads me to believe that firms operating in both local and global economic environments can benefit greatly from a knowledge-centric approach. Conceptually, the logic and rationalization of Knowledge Centric Management lies in the interoperability achieved of management ideology, knowledge creation, information sharing, organizational learning and quality of interaction between agents of organizations through the notion of spatiality. This entire synchronization process relies on dynamic organizational structure and aspires to promote better organizational structures for successful innovation. The framework of Knowledge Centric Management is inspired from the various theoretical elements that have been covered so far, in addition to being a result of a long thought process starting in the early years of my academic endeavors. It consists of four separate dimensions, which are interdependent and supportive conditions to each other. In the following chapter each will be discussed in detail.

2.5.1 Soft Power Management: The Relational Manager

Praise is like the sunlight to the warm human spirit; we cannot flower or grow without it.
And yet, while most of us are only too ready to apply to others the cold wind of criticism,
We are somehow reluctant to give our fellow the warm sunshine of praise
(Lair, 1976, p. 248)

The first component of the Knowledge Centric Management framework is Soft Powered Management, and the proficiency of this component rests heavily on the manager possessing traits of relational competency. Relational competence, also known as emotional intelligence, is attributable as the capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships empathetically. Leaders have the main responsibility for ideas having offspring. People put themselves forth and provide their personal contributions if the right social contexts and conditions are in place. For the knowledge-centric organization, learning and sharing knowledge is vital. Studies show that when comparing star performances with average ones in senior leadership positions, nearly 90 percent of the difference in their profiles was attributable to emotional intelligence factors rather than cognitive abilities (Goleman, 1998). Indeed, unlike the ´hero´ as leader of traditional organizations, giving directions and making short-term decisions, the leaders of learning organizations "are *designers* of the learning process; *stewards* of the vision (a ´purpose story´ of ´governing ideas´´); *teachers* to the organization´s members; and *managers of the creative tension*" (Coopey, 1995, p. 195). In order for management to teach and design an efficient learning process, I suggest that two components are essential; firstly, managers wielding *soft power* and secondly, the *personal traits* of the manager.

Firstly, I argue that soft power seems most appropriate for learning effectiveness. Soft power, unlike hard power, is the ability to shape others through appeal and attraction rather than force or monetary means (Nye, 1990). Executing soft power is to influence others to gain desired outcomes. This can be viewed as the process of taking a client-centered approach, building strong relationships across the hierarchy, lessening bureaucratic control, gaining mutual understanding and trust between management and its employees (Costea et.al. 2008; Heelas, 2002; Semler, 1993; Rogers 1969), as has been detailed in the sections above. Factors of technology and education have become more important in economic growth, and power lies not in resources but in the ability to change behavior [of organizations] (Nye, 1990). A soft powered managerial approach is as much about a cultural ideal for the learning organization, as it is about the manager´s capacity for emotional and relational intelligence. Leadership is

always a relationship between two or more people, but to conduct soft powered management demands much more emotional expertise than economic or administrative expertise, and it is here relational leadership is central. Efficient soft power management is largely about portraying sincerity, mutual respect and trust.

A manager who enforces soft power mechanisms should forget about the benefits to him- or her, and focus attention towards the benefits of others. Be empathetic; when delegating tasks, show the person what he or she will gain from doing the task. This might be done as simple as rephrasing the way in which one gives an order to someone else. For instance, consider these two hypothetical approaches when a manager delegates a task, inflicting overtime work on his subordinate; e.g. 1) (Manager): *I need you to work over time and review the report for tomorrow´s presentation to our client;* e.g. 2) (Manager): *If you could put in some over time to review the report ahead of tomorrow´s presentation, it would help the company a lot and might even provide you with some insight to showcase at the presentation*. Notice that in example 1, the wording is strict and enforcing. In example 2, the manager tactfully requests a task and overtime to be done, and at the same time demonstrates the benefits that the employee will get from so doing. The employee may in any case not be too happy about working over time, but by explicitly telling what he or she might gain from doing it (in this case, help the company and provide insights which he or she may showcase to everyone the next day); the manager will sway his employee and make the task more attractive. That is the gist of soft power management, and it serves as a demonstration of what it entails to be a relationally competent manager.

Which brings us to the second component of soft power management, the personal traits of the manager. For soft power to be efficient, the relational traits should be strong in the manager. Relational competence is defined as *skills, abilities, knowledge and attitudes that establish, develop, maintains and repairs relations between people* (Spurkeland, 2012, p. 17). It is largely about influencing people in organizations through interplay, individual orientation and genuine interest in psychological interpersonal relationships. Adversely, position-based leadership is where management has full power and executes decisions authoratively (Spurkeland, 2009), similar to that of a Foucauldian approach. A manager taking a knowledge-centric approach must be skillfully equipped in a relational sense, and relational leadership implies that the leader does not see him or herself as indispensible or in a special position, but rather as a partner and co-worker in a bigger picture. Leadership is about making

others good, and to do so one must invest in building relations (Spurkeland, 2012). Building strong and genuine personal relationships between leaders and colleagues generates a comfortable environment in which creativity may be unleashed. “People in a co-working situation who dislike each other, will not have the energy to think creatively in each other´s presence; whereas, people who like each other, also like to fantasize together“ (Spurkeland, 2009, p. 26).

Fantasizing and unleashing creativity can inevitably lead to a meaningful spur of new ideas and innovation. It should be mentioned that this particular trait is a deeply personal and mental process. Not all people, and in particular, managers, possess this trait. Normal intelligent people can learn professional and administrative aspects of leadership and management, but relational competency requires particular, cognitive attention. Universities and books cannot teach you this skill. “It must be developed by taking a general interest in people and actively engaging them, in addition to have the social intelligence and skills to show *positive* feelings towards others. Social intelligence is arguably the most important trait of the relational manager” (Spurkeland, 2012, p. 25). Without it, all foundations of soft powered management and relational leadership are weakened. Although some excel in relational competencies, often due to natural abilities, those who do not have a natural “knack” can still *learn* to be better relational people. One simply needs to be more aware and conscious about empathy, feelings and relations within oneself and towards others. We end this section on soft power and the ´relational manager´ with the words of the most influential strategist of all time, Sun Tzu:

> [The commander] has qualities of wisdom, sincerity, humanity, courage and strictness; when one treats people with benevolence, justice and righteousness, and reposes confidence in them, the army will be united in mind and all will be happy to serve their leaders (Tzu, 1963, pp. 64-65).

2.5.2 The Ecology of Learning: The Formation of a Learning Environment

A stupid despot may constrain his slaves with iron chains;
But a true politician binds them even more strongly with the chains of their own ideas
(Foucault, 1977, pp. 102-103)

The Ecology of Learning is the second component of the Knowledge Centric Management framework. This was briefly mentioned in section 2.4.2, and is the environment of learning resulting from the facilitation of architecture. The ethos of *ecology* of learning is that it seeks

to encompass the processes and interactions among participants of the environment. It concerns the influence of the spatial environment on the mind, intellect and the behavior of people within it. As has been discussed throughout the theoretical overview, learning is critical for an organizations ability to innovate and evolve over time. And for learning to occur, the processes of the organizational environment need to be fully functional, interactive, and adaptive as an organizational *ecosystem*. The ecology of learning is self-built. It refers partially to the design of space discussed in section 2.4.2, where office spaces are designed to maximize learning more face-to-face interaction. Humans, I argue, do not have a ´natural´ habitat; we construct them ourselves and express therein who we are and what we represent. Furthermore, we constantly improve this habitat and there has been a significant change to the way our office ´habitats´ are designed in the past decade, seen in the geographies and architectural design of offices that can be seen as a new way of doing work. The ecology of learning is an ideal to which organizations should strive towards, but which have no particular end. It is a continuously evolving process. Similar is said about the learning organization as a whole, it is an ideal towards how organizations should evolve in order to be able to respond to the various pressures (Finger & Finger, 1999). Furthermore, and underlying in learning organizations, is that we view learning as both individual and collective. Whilst learning must occur in individuals for individual developmental and creative purposes, learning also has to be collective for the organization in order to generate knowledge unity and effective information processing.

This echoes the thoughts of Morgan and the organizational brain, where organizations are information and communication system. For an organization to systemize knowledge holistically as a "brain" does, it is important for it to have its characteristic structure intact. This structure takes many forms in the academic literature but is recognized by common denominators such as organic, flat and decentralized, with minimum formalized procedures in the work environment. According to one contribution on organizational structure for learning, learning organizations have five core strategic building blocks to be a learning organization; 1) mission and vision, 2) leadership, 3) Experimentation, 4) Transfer of Knowledge and 5) Teamwork and Cooperation, as depicted in Figure 5. All these elements of learning are pre-requisites for a knowledge-centric approach to function.

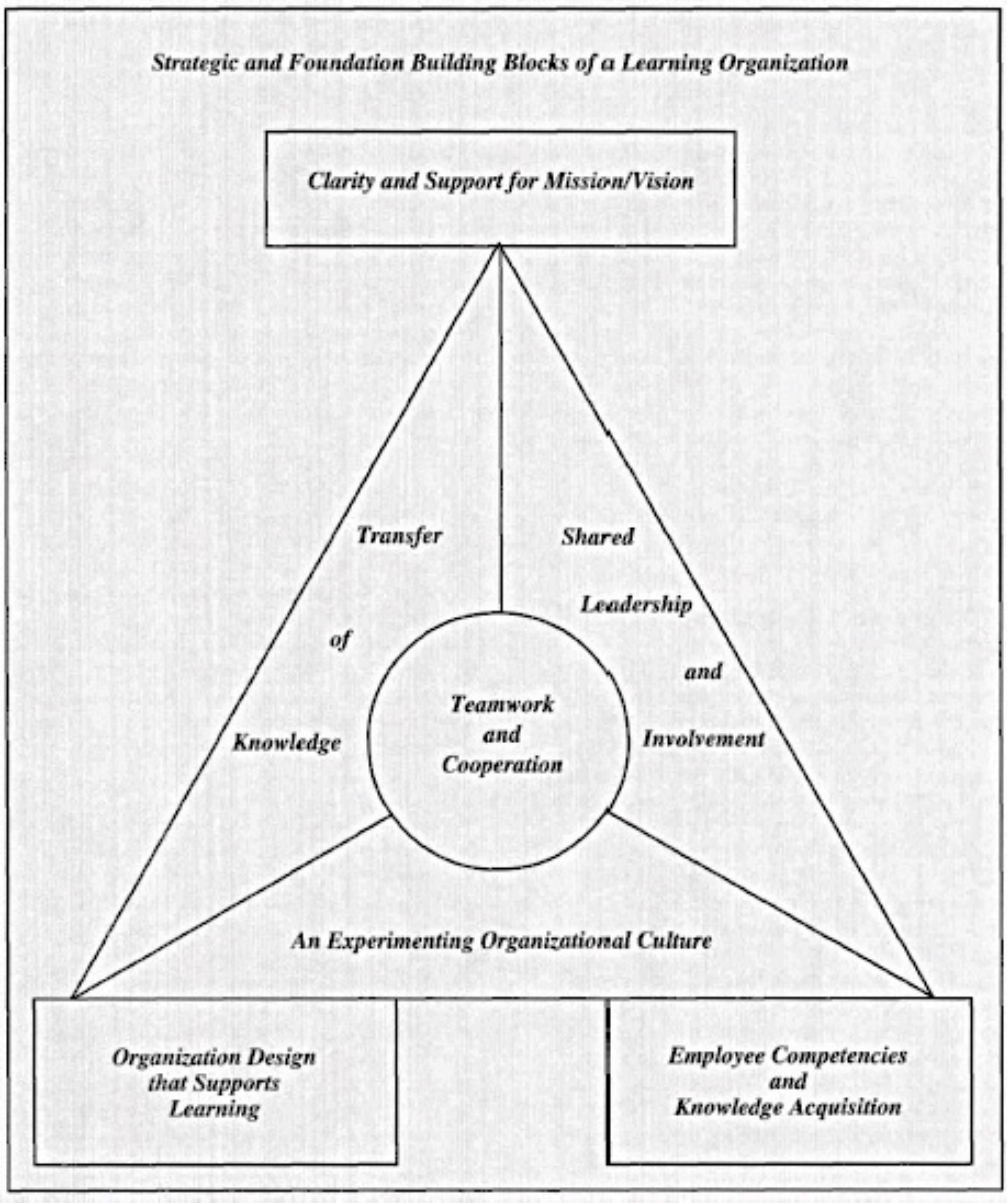

Figure 5: The New Organizational Archetype. In *Toward a Learning Organization: The Strategic Building Blocks* (Goh, 1998, p. 17)

Furthermore, we must be aware that for the knowledge-centric manager to ensure that his or her organization captures enough information for learning to have true substance, one relies on both localized learning and globalized learning. As some note, localized learning and globalized learning play different roles in the innovation and knowledge creation [of firms]; especially for high-tech industries, cutting-edge knowledge is changing, improved products and process is evolving and upgrading (Lan, 2010). Ensuring localized and globalized learning for the organization concerns parts of the third component of the Knowledge Centric

Management framework discussed below, namely the linkage of localized learning through local buzz and the linkage of globalized learning through global pipelines (Bathelt, Malmberg, & Maskell, 2004). For this to happen, the organization relies on a strong absorptive capacity, that is, the ability to exploit external knowledge using prior related knowledge, which confers an ability to recognize the value of new information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990). The premise of absorptive capacity is that the organization needs prior knowledge to assimilate new knowledge; moreover, "an organization´s absorptive capacity rests on the absorptive capacities of its individual members" (Cohen & Levinthal, 1990, p. 131). The proficiency of management to exploit knowledge is through knowledge communion and sharing mechanisms, i.e. the sharing of thoughts and feelings of intimate fashion. It can be argued that through the use of architecture, such sharing is enhanced. In other words, we can argue that strengthening organizations´ absorptive capacity is aided by architecture and thrives the ecology of learning. Having a strong and fruitful ecology of learning will arguably strengthen the position of employees of the organization as they become integrated in the chain of command. The more they know as individuals and as a group, the more empowered they become.

2.5.3 Spatial Networks: Strategic Local-Global Networks

It has been said that arguing against globalization
Is like arguing against gravity
(Annan, 2006)

Spatial Networks is the third component of the Knowledge Centric Management framework. Spatiality in its broad sense is relating to space and the position, shape and size of things in it (Oxford Dictionary). Space is an important element of governmentality. Indeed, "to govern, it is necessary to render visible the space over which government is to be exercised" (Thrift, 2000, p. 677). Spatiality, in a knowledge-centric perspective, is the concept of spatial proximities and how these impact human behavior in organizations. On a local level, spatiality can be the physical environment of an organization´s facilities and office spaces. It is the geographical nature in which the people of an organization work within; think Foucault´s panopticism or architectures of learning. On such a local level, space is a mean for casual interaction, inspiration and knowledge spillover. Space can also be geographically relative. Due to technological advancements, space is no longer confined to territorial boundaries; it can be fluid and its fluidity only increases the more technologically advanced

our world becomes. Technological advances since the late 20th century signifies that distance that once stood in the way of human interaction has decreased. Evidence of trade expansions through the centuries is clear, noticeable by example as we saw a 6.2 percentage increase in trade from 1950-2007, seen in Figure 6.

Globalization waves in the 19th and 20th century
(Percentage change unless indicated otherwise)

World	1850-1913	1950-2007	1950-73	1974-2007
Population growth	0.8 [a]	1.7	1.9	1.6
GDP growth (real)	2.1 [a]	3.8	5.1	2.9
Per capita	1.3 [a]	2.0	3.1	1.2
Trade growth (real)	3.8	6.2	8.2	5.0
Migration (net) Million				
US, Canada, Australia, NZ (cumulative)	17.9 [a]	50.1	12.7	37.4
US, Canada, Australia, NZ (annual)	0.42 [a]	0.90	0.55	1.17
Industrial countries (less Japan) (cumulative)	...	...	...	64.3
Global FDI outward stock, year			1982	2006
FDI as % of GDP (world)	...	...	5.2	25.3

a Refers to period 1870-1913.
Source: Maddison (2001), Lewis (1981), UNCTAD (2007), WTO (2007a).

Figure 6: Globalization waves in the 19th and 20th century (World Trade Organization, 2008, p. 15).

In the late nineties, as the 20th century came to a close, trade expanded rapidly, partly driven by innovations in the information technology sector (World Trade Organization, 2008). This testifies to the state commonly referred to as the ´global economy´ that organizations operate in. Consequentially, as trade has dispersed through the years, modern day organizations increasingly operate in a global economy and are interlinked in complex networks with a high degree of interdependencies on both local and global scale. In other words, on a global level, spatial networking is the degree of interdependency between organizations in the presence of each other and/or distantly related. It is important to be aware that despite organizations operating in a global economy, their everyday practice is mostly locally tied. For example, the global platform of a transnational firm will typically be tailored to suit the needs of the local conditions (local labor practices, local markets, etc.). In reality, a more accurate terminology may well be the *local-global* economy. Organizations manage and conduct practices on a local basis, but operates in a more globally tied sphere. Practicing the art of management in connectedness with a network of firms sees a shift from managing themselves, that is, the management of resources and acting, towards the management of integrating resources and

reacting (Håkansson & Snehota, 1989). For the knowledge-centric manager, grasping the concept of spatial networks is important because it is deemed insufficient in the local-global economy to only concentrate on internal affairs and capabilities to maximize learning efficiency within the organization. To a much larger extent than before, we see organizations monitoring, comparing and imitating each other ´s solutions on a global scale. They are *reacting* to each other. This is as a reaction spurred by local-global connectivity. As such, the knowledge-centric manager must be adept at both managing internal resources but also integrating external resources.

Managing internal resources is largely concerned with creation of knowledge within and across a single firm. Moreover, the tacit types of knowledge that is transferred and created are vital when talking about internal knowledge creation. Sub- and multidivisional firms have substantial advantages in being able to combine expertise from a broad range of fields. Achieving combined expertise can be done in four stages, exemplified as followed (Bathelt, Malmberg, & Maskell, 2004, pp. 34-35):

> When experts from different departments get together to develop a new product, the first stage will usually involve the presentation of different types of knowledge relevant for this new development. This requires that various sources of tacit knowledge are articulated and clarified to allow for their evaluation and discussion by those who are not familiar with it. Stage two involves the re-combination and connection of the various explicit knowledge pools in such a way as to develop a new product conception. This can be done in rounds of structured discussion and brainstorming. Once this stage has resulted in a new product conception, stage three is to internalize (embody) knowledge into the technical systems and employees' routines to build and test a prototype. Fourth and finally, this tacit knowledge is constantly being transformed and perfected through processes of learning and socializing.

This process of generating knowledge within a firm, or also together with a closely situated firm, is what Bathelt. et.al. call ´local buzz´. A firm experiences local buzz within its environment or in a cluster of co-presence with other locally situated firms, where face-to-face interactions and social contexts form the platform for non-designed and accidental knowledge flow (Bathelt, Malmberg, & Maskell, 2004). This is very much in the line of thought with architectures and geographies offices, where the environment influences new ways to enhance interaction between workers, allowing them to share information and engage in interactive knowledge exchanges with greater pace.

The problem with local buzz is that over time knowledge creation will stagnate in the organization if their environment is not connected to external networks. This problem is the excessive density of knowledge creation that is often referred to as a lock-in effect (Lan, 2010), where the clusters of a few firms do not reach out to others for knowledge exchanges. Lock-in effects can especially occur in cases of internal knowledge creation, once knowledge generation across divisions in a firm is saturated or used up over time. Firms therefore connect themselves to what Bathelt et.al. call ´global pipelines´ to open different potentialities and feed local interpretation and usage of knowledge hitherto residing elsewhere (Bathelt, Malmberg, & Maskell, 2004). These pipelines are channels of distant communication and interactions between firms that are not geographically close to each other. Furthermore, these pipelines are categorized by strong efforts in trust building, costly decisions of what information to share (costly in terms of time spent on decision making), reciprocity and openness. If a firm succeeds in incorporating local buzz and global buzz as part of their strategy to create knowledge flow, they stand stronger in creating new knowledge and values. Indeed, it is when locally embedded knowledge is combined in novel ways with codified and accessible external knowledge that new value can be created (Bathelt, Malmberg, & Maskell, 2004).

Spatial networks are a gaping matter both in theory and in practice. Theory suggests however that there are important motives that persuade firms to attach and integrate themselves in networks. It was argued in section 2.4.1 that organizational learning relies on externalities, i.e. partnerships and collaborations between firms in a shared community. “The motives for this upsurge of cooperative competition are perceived as strategic: risk sharing; access to markets; technologies; complementary skills; shortened innovation cycles; and enhanced learning” (Powell, 1996, p. 51). For the knowledge-centric manager, spatial networking concerns consciously and strategically addressing and adjusting to spaces, both locally and globally, for streams of knowledge to flow from distant and close. To exemplify this, Norway became a full-fledged oil nation in the mid-’70s. One of the main reasons for Norway´s success was that their shipping and related maritime businesses provided an administrative network and the technical and management skills needed to build up the oil industry (Hammer, 2000). Spatial networking entails utilizing local buzz, through architecture and open spaces so that tacit knowledge and expertise can be articulated and transferred between peers. On a local level, space is a mean for the knowledge-centric manager to create casual interaction, inspiration and knowledge spill over within the organization. On a global level, space is a mean for the

knowledge-centric manager to interconnect the organization with distant, resourceful organizations and networks through global pipelines in order to integrate distant knowledge. Globalization has led to knowledge no longer being geographically fixed to particular sites, and this cannot be ignored. This is vital for managers to comprehend. Space is no longer confined to territorial boundaries; it is fluid and its fluidity only increases the more globalized economies become. Awareness of the significance of spatial networks, and exploiting them, characterizes the knowledge-centric manager.

2.5.4 Fertilizing Knowledge: A Metaphor for Seizing the Value of Knowledge

> Neither sex, without some fertilization of the complementary characters of the other, is capable of the highest reaches of human endeavor
> (Sartre, 1963, p. 8)

Fertilizing Knowledge is the fourth and final component of the Knowledge Centric Management framework. Fertilizing knowledge is a metaphor for *seizing value* from allowing knowledge to effectively be captured, exchanged, used and re-used. I have called it *fertilizing knowledge* because this particular terminology, or lingo, expresses the process of innovation in the spirit of Schumpeterian innovation. Recall the discussion in section 2.3 of the producer, or manager, who initiates economic change by differing in some respect or other from those creations to which consumers have been taught in the habit of using. Think also back at Morgan´s ideas on metaphors that lead us to understand situations in powerful yet partial ways, as discussed in section 2.4.1. Conceptually, to fertilize knowledge involves *reaping what you sow; and, what you sow is continuously working on the inputs in order to create innovative, new output.* It encompasses the sphere of Knowledge Centric Management, and is the essentially a *state of mind* and *philosophy* of the knowledge-centric manager. Fertilizing knowledge is a metaphor intended to serve as a matter of perception, something for the manager to think about his organization and his employees as individuals with their different backgrounds and experiences to understand something intuitively, in collaboration as an entity. The main purpose of this is to gather the employees, like the shepherd gathers his herd, and make the employees see interactive and collaborative work as something to which they *contribute* to rather than something they are *obliged* to do. It involves getting employees at every level of an organization contributing creatively in developing, manufacturing and creating new products. In doing so, the knowledge-centric manager tries to make the employees see the value of what they are doing. It is a continuously and exhaustive process.

The main goal is always to maintain a strong sense of unity and collaborative creation in the organization.

The benefits of merging multiple skills and perspectives provide more resource to solve a problem than what would be available to one individual alone. Furthermore, in order for to successfully pool resources in teams, it is suggested that teams be comprised from heterogeneous members with complementary skills (Levi, 2014). For the knowledge-centric manager to successfully unlock the potentials of pooled, complementary resources, he or she must take relational initiative. Relational initiative can be seen as a fundamental attitude towards initiating contact between and across departments in the organization and with external partners who are complementary and developmental (Spurkeland, 2012). This also testifies the importance of managers being relationally skilled. The competitive sharpness of today´s economy leaves organizations vulnerable. As a result, organizations and management are drifting towards key nodes of fellowship, freedom, trust and collaboration, seen as the softer, cultural turn of capitalism. The relational initiative is about an extrovert and dynamic approach to leadership. "Leaders who lack relational initiative, stand in great danger of being severely outcompeted; the ones who show interest and build relations with people and partners thrive, while the ones who are relationally lazy, die" (Spurkeland, 2012, p. 158).

Traditions are often a hinder to change and creative thinking. What management relied on before is not sufficient to thrive on in the future. New products and solutions are released universally almost more rapidly than consumers are able embrace them. Change is the name of the game; and managers who actively seek contact and interact with employees and partners will reap great benefits. Too often managers seek contact up-wards in the system and overlook those below, to detrimental effect; moreover, women are significantly better at relation building than men (Spurkeland, 2012). Although there is a difference between men and women in respect to relational competency, I believe this has solely to do with ones awareness and, subsequent, determination to actively change ones behavior. Emotional maturity and relational competencies may be learned, worked on and improved in a continuum. This goes for both sexes, and it is apparent through research that men in particular have a greater potential for improvements in relational skills and competency. This is important to understand because academics seem to agree that relational competence will be the rock of future work life (Fossestøl, 2004). Engaging in people, and entwining those with complementary skillsets, will have great impact on increasing the value of knowledge.

2.5.5 Knowledge Centric Management Framework

The framework of Knowledge Centric Management is demonstrated and summarized in Figure 7. The knowledge-centric manager must use his relational skills and embrace soft power, format and sustain a learning environment, tap into local and global knowledge bases using networks, and finally, fertilize knowledge assets by actively ensuring employees are integrated and contributing their complementary skills in a unified and empowered matter. Accomplishing this is hereby theorized to integrate managerial efforts and organizational methods which interconnects the firm both internally, so to effectively spill knowledge and increase competence through co-work and learning; and externally, by interconnecting the firm with distant and resourceful assets in networks.

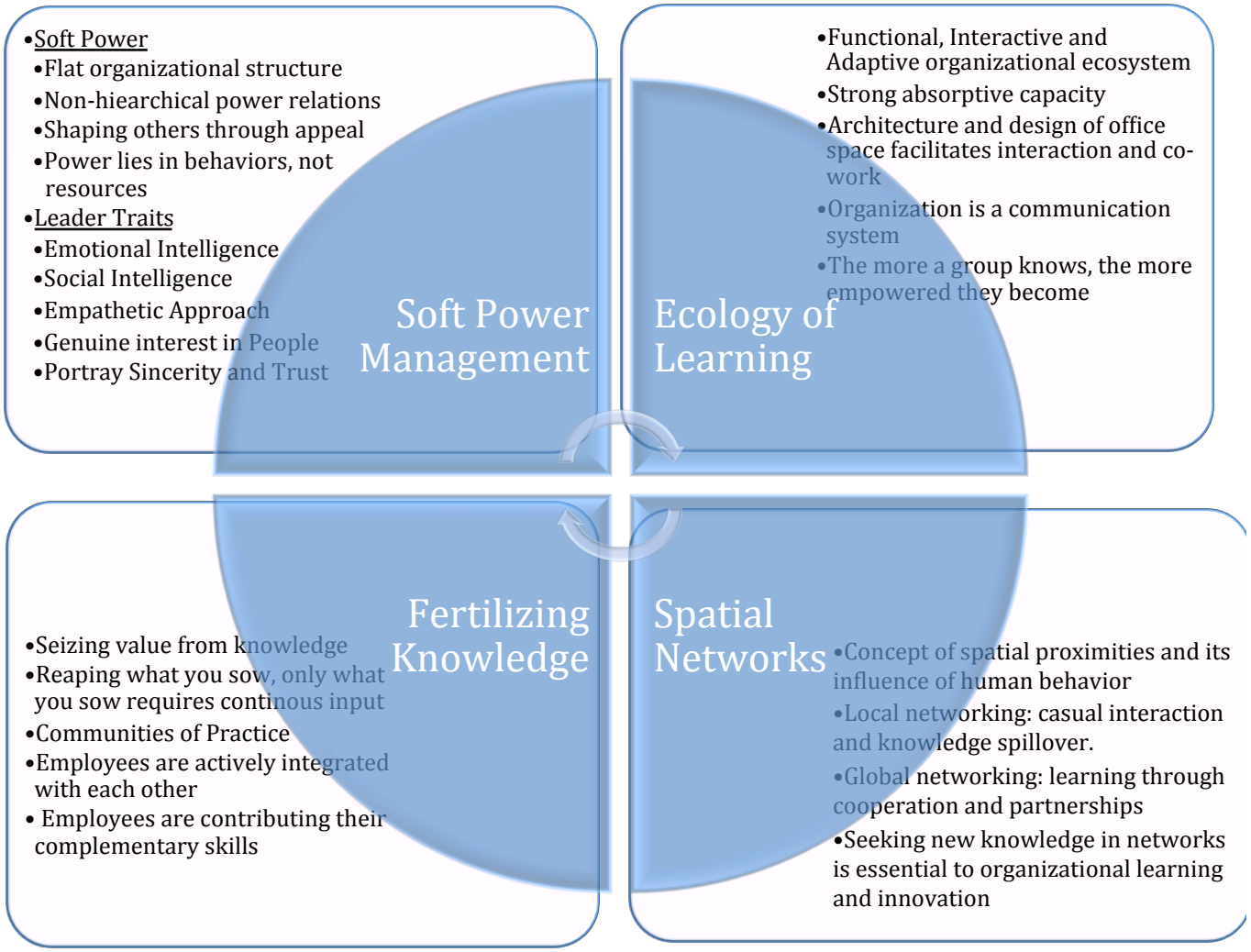

Figure 7: The Knowledge Centric Management Framework (Author´s own model)

2.6 Challenges for Knowledge Centric Management

Some potential challenges and barriers have been identified to knowledge management and its feasibility. As discussed earlier, knowledge management is argued to be a paradox in nature, possibly a fad that will pass in time, and to some, nothing short of a Utopian idea of organizational culture (Aidemark, 2009; Wilson, 2002). In a study involving 50 respondents from executive and managerial positions, it was shown that the managers indeed expressed concern that knowledge management might be perceived by senior managers as just another "fad" and that the concept suffered from immaturity (Alavi & Leidner, 1999). Thus, one of the most important challenges of Knowledge Centric Management is the conceptions and belief in knowledge management as an appropriate and effective tool for innovation and organizational learning. It was further reported, "managers are in need of practical guidelines on how to build and implement knowledge management systems and how to facilitate organizational change to promote knowledge sharing" (Alavi & Leidner, 1999, p. 13). The perceived lack of practical guidelines gives indications to why the concept of knowledge management is questioned as diffuse, unclear and therefore labeled as a "fad". Furthermore, in addition to concerns regarding the cultural, managerial and informational issues of knowledge management, there was a general concern regarding the business value of knowledge management and the need for metrics upon which to demonstrate the value (Alavi & Leidner, 1999). The framework of Knowledge Centric Management is an attempt to provide organizational guidelines and offer some clarity to the practical values of knowledge management.

Another challenge in their study was expressed about customer and client confidentiality if information about customers and clients is gathered and made widely available in the organization (Alavi & Leidner, 1999). Moreover, and in relation to client confidentiality, concerns were expressed over issues related to technical infrastructure and the security of data on the Internet. More specifically, "the need for configuring an effective technical infrastructure and architectural requirements in the face of highly dynamic technology" (Alavi & Leidner, 1999, pp. 15-16) was highlighted.

A last important ponder on challenges to the knowledge management concept is whether focusing on knowledge is a productive entrance to organizational analysis and management practices, or is it best understood as a rhetorical concept? If the latter, it would be in the sense

that the concept serves mostly as an appeal to the organization in the spirit of Aristotle´s ingredients for persuasion; that is, *ethos* (appeal to ethics and credibility), *pathos* (appeal to emotional response), *logos* (appeal to logic). If we were to view knowledge management rhetorically in the sense of pathos, then perhaps knowledge management may simply be confined to an organizational "fairytale" or myth, which in the worse case could polarize knowledge. Knowledge management would then serve as a term used for persuasive purposes, lacking sincerity and a meaningful context. If that would be the case, knowledge management looses its incorporative and pragmatic value, and it would indeed be simply a "fad". However, the following chapters will see to outline its cognitively rationale, i.e. its logos, and show how Knowledge Centric Management practically can serve as a cultural, managerial and organizational doctrine for change and innovation.

2.7 Summary

As stated early in this chapter, we appear to be on the verge of a new era where digital and technological change will disrupt and change industries and work routines significantly. Profound technological change is not new in a historical sense, as we have faced and evolved through several industrial revolutions through the history of mankind. What separates this particular 4th industrial revolution from its predecessors is that it is occurring as we have entered a knowledge-based economy where information, knowledge and learning are key resources for maneuver. This is argued to have major impact on organizational structure and work. I defined knowledge as *information about the world that is cognitively embedded and applied to solve problems,* and moved towards accounting for a brief history of the act of management. Practicing management is argued to have shifted from an authoritative and disciplinary art, to taking a ´cultural turn´ based on the idea that organizations are to be more *knowledgeable* in order to deal with a more turbulent and fluctuating world economy. Its testament lies in the argument that in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge. The cultural turn is seen in that work is supposed to be about self-fulfilment and self-realization, where the main resource of management and organizations are knowledgeable workers who continuously interact to learn and innovate. Managing knowledge, that is, knowledge management, was defined as *the coordination of activities performed by knowledgeable workers so to effectively capture, share and (re)-use information and knowledge*. Because of increased technological advances, automation of production and manufacturing on a global scale, there is a need for

fundamental shifts in skills and processes in organizations. Organizations´ knowledge bases, i.e., the knowledge they possess, new knowledge they attain and how they re-use knowledge are essential to the survival of the organization and its competitive force. Moreover, studies indicate a positive relationship between knowledge management practices and innovation performances. This is true especially for management of manufacturing companies, when developing strategies for product and process innovations.

For organizations to innovative, they need to incorporate learning within the organization in order to keep generating new knowledge. Part of this is being adept at single-and double loop learning. Organizations must be able to detect and correct errors of the operating norm (single-loop learning), as well as questioning the appropriateness of what they are doing (double-loop learning). Combining this with an appropriate sense of strategic direction and pattern of organization enhances an organizations capacity to learn. Recognizing changes of pattern in organizations, requires not just cognitive skills from the manager, but also emotional, intuitive and tactfulness. Furthermore, organizational structures like top-down management encourages single loop learning, but *discourages* double loop learning, leading us to see why management has taken a softer, cultural turn. Work and management should take place within a culture that encourages fellowship, freedom, trust and self-development. It should also take place in an environment architecturally designed to facilitate and support this culture. Space itself and the architecture of space can create an interactive environment where knowledge is easily transactional and transferable.

Based on the various theories and information gathered about the contemporary situation of workers, organizations and economies in relation to the knowledge-based world we currently find ourselves in, I presented a theoretical framework for Knowledge Centric Management. The theoretical elements for this framework include a) soft power management; b) formatting and upholding an ecology of learning; c) strategically using spatial networks of local-global networks to attract new knowledge; and finally, fertilizing knowledge.

3 Methodology

This chapter will present the design and methods used to collect data during for the thesis and demonstrate how the choices of methods are eligible and sufficient to find answers to the proposed research question and propositions. The chapter is divided into eight sections; 1) choice of case and firm, 2) research question, 3) thesis propositions, 4) informants 5) the logic linking of data to thesis proposition and 6) criteria for judging findings, 7) conducting interviews and 8) ethical considerations. It can be said that my research has an ethnographic element to it, as ethnographic research developed out of concern to understand the world-views and ways of life of actual people in the context of their everyday lived experiences (Crang & Cook, 2007). This thesis employs qualitative research design for analysis. The label qualitative methods has no precise and articulate meaning in any of the social sciences; rather it is best seen as an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world (Maanen, 1979). Strategically, this thesis made use of a case study design, which is argued to be useful in situations where understanding individual, group, organizational, social, political and related phenomena (Yin, 2003)

A qualitative research design was chosen to allow a nuanced and holistic understanding of the contexts related to how knowledge sharing and organizational learning can be improved by the aid of the proposed framework The firm is comprised of 42 employees[2] and specializes in injection-molded production. Within the company, representatives from both management and employees were interviewed.

3.1 Choice of Case Study and Firm

This particular study employs a case study research on a singular case study. A case study method was employed seeing as it revolves as an empirical inquiry that investigates a contemporary phenomenon within its real life-context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2003). Furthermore, it has been made clear that organizational researchers face a variety of paradigms with which to

[2] As of February, 2016

theorize their subject matter (Schultz & Hatch, 1996). In light of the nature of my research, that is, studying management effects on organizational learning and knowledge generation, the thesis is naturally concerned with organizational theory. In other words, during the actual conducting of the data collection it was important to consider the contextual elements of what was attained from the participants. The point of my data collection was to gain an overall view of the participant's experiences and thoughts on contemporary events and conditions. Some have pointed to hermeneutics as a mean to understand textual data, where textual data can for instance be an organization, which the researcher comes to know through oral or written text (Myers, 1997). Furthermore, interpretation, in the sense relevant to hermeneutics, is an attempt to make clear, to make sense of an object of study. This object must, therefore, be a text, or a text analogue, which in some way is confused, incomplete, cloudy, and seemingly contradictory. The interpretation aims to bring to light an underlying coherence or sense (Myers, 1997).

Case study designs are typically a preferred method in situations when a) the main research questions are how and why questions; b) a researcher has little or no control over behavioral events; and c) the focus of the study is contemporary (as opposed to entirely historical) phenomenon (Yin, 2003). The proposed phenomenon being studied for this research is to what extent a knowledge-centric approach to management enhances organizational learning and how organizational learning enhances a firm´s innovativeness and competitiveness. It therefore made sense to conduct a case study for this research, seeing as a case study contributes uniquely to organizational and management studies (Yin, 2003). One of the rationales to justify a single case study is if theory has specified a clear set of testable propositions (Yin, 2003). This thesis has constructed a total of four propositions which is further detailed in section 3.3, and which is to be tested following the analysis in chapter five,

For a case study design, five components are especially important: "1) the study´s question; 2) its propositions, if any; 3) its unit(s) of analysis; 4) the logic linking the data to the propositions; and 5) the criteria for interpreting the findings" (Yin, 2003, p. 21). This chapter provides the research design for this thesis, and which was primarily based on the suggestions proposed by Yin.

3.2 Research Question

This thesis proposes the concept of Knowledge Centric Management as an approach to create organizational change, learning and innovation. It has been suggested that when conducting a case study, the questions "how" and "why" are likely to be most appropriate, therefore the investigators task is to clarify the nature of the study questions (Yin, 2003). Building from the theoretical framework that was explored in the previous chapter, the thesis has set out to answer the following research question, which explores two areas of organizational and management theory:

To what extents can knowledge-centric approaches to management enhance organizational learning, and how does organizational learning strengthen a firm´s innovativeness and competitive advantage?

The first area of study concerns the framework and modelization of Knowledge Centric Management suggests focusing on knowledge when practicing management, as this can contribute to learning among individuals in the organization and consequently generate new ideas that may lead to innovation. As discussed in chapter two, knowledge management components has a direct effect on innovation. The first area of study is therefore on a leader- and management perspective.

The second area studied concerns the relationship between learning and innovation. In the theoretical chapter it was suggested that organizations should *learn to learn* and that organizations should tap into the tacit and subjective knowledge which individuals within possesses in order to constantly renew themselves. The second area of study is therefore on how organizational learning enhances innovation.

3.3 Thesis Propositions

Stating thesis propositions is vital to find answers to the study. The rationale behind stating thesis propositions is that each proposition directs attention to something that should be examined within the scope of the study (Yin, 2003). Yin argues further that "the "how" and "why" questions that the research is based upon captures what you are interested in answering, but does not point exactly to what you should study" (Yin, 2003, p. 22). The thesis

propositions will be presented here and revisited in chapter five as part of the extensive analysis. Having covered the theoretical aspects of the research and composed a framework for Knowledge Centric Management, the following propositions are stated to provide scope to the study:

1. Soft power management and leaders with exceptional relational skills enhances learning effectiveness and builds genuine relationships between colleagues which enhances collective creativity
2. Architecture facilitates interaction and learning in the organization
3. If the knowledge-centric manager grasps the concept of spatial networks, tapping into knowledge sources locally and globally, the organization will sustain flows of knowledge.
4. Efficient implementation and use of knowledge increases the organizations innovative capability.

3.4 Informants

Qualitative methods base the selection of informants on strategic choices. This means choosing informants on the basis of characteristics they possess that are strategic in relation to the issue one is examining as a researcher (Thagaard, 2009). I conducted two separate rounds of interviews, taking place in February and March of 2016 respectively. Prior to the first round of interviews, the informants were chosen in collaboration with and during the initial meeting with managing director Lars Stenerud. Before conducting the interviews, Stenerud and I had a longer session getting to know each other. This was a very productive way for me to understand who Plasto were and with whom I should talk to. Moreover, given that I had stated the thesis propositions before meeting the firm, I had a clear view prior to my initial meeting with the company on which type of informants I needed to shed light on the research question and propositions.

Prior to the second round of interviews, I had already built a personal relationship with the company and some of the actors within. Furthermore, part of the data analysis from the first round had already been worked on, which gave me a clearer view of what employees to interview during the second round in terms of getting a better picture of the organization as a

whole. The second round informants were therefore handpicked and contacted on my own initiative, with the permission of the managing director.

3.5 Analytic Strategy and Linking Data to Thesis Propositions

There are various approaches to analyze and interpret qualitative data, however, the end goal is always to understand the data through categorization and connections (Kitchin & Tate, 2000). Making these connections means linking data to the stated propositions, which can be done in many ways. One promising approach is that of pattern matching, whereby several pieces of information from the same case may be related to some theoretical proposition (Yin, 2003). The overall analytical strategy that was used for this thesis was following the theoretical assumptions that led me to the study in the first place. Yin proposes that this is a common strategy, in that propositions would have shaped the data collection plan and therefore given priorities to the relevant analytic strategies (Yin, 2003, p. 112). Indeed, since I already laid the theoretical groundwork and stated my thesis propositions prior to initial data collection in Åndalsnes, I had systematically focused my attention to what data would be relevant and what would not be. In terms of the actual analysis after having collected the data, the strategy mainly consisted of examining the data and linking the data to the theoretical foundations and propositions stated. Because I had categorized the interview guides into topics for discussions, it became easier during the analysis to coordinate and find correlations between the data, theory and comparing what each informant had provided of data.

The interviews were recorded by the aid of a tape recorder, and consequently transcribed in full. This was a time consuming process, but which allowed for the data to be fully presented and archived. More importantly, an interview in itself is a conversation between the researcher and the participants. Dialogues itself is argued not to be research data until it gets put to paper, therefore notes and transcriptions are the actual data that is being constructed (Crang & Cook, 2007). This goes, even concerning casual and/or "off-the-record conversations that are not recorded, for it to be used and presented as data it needs to be written in journals or notes of the researcher. Furthermore, it ensures that no data was lost in context. The interviews were transcribed in full from start to finish. This resulted in a larger chunk of documents with verbal texts. This was to ensure that not only did everything that was said during the interviews were put in writing, but also the contextual elements of what was said.

3.6 Criteria for Judging Findings

There is not currently a precise way to set criteria for interpreting data and findings, indeed Yin questions how close a match has to be in order to be considered a match. However, in order to judge the research designs validity, I have proceeded to follow Yin´s four-step structure to allow researches to judge the quality of a design and the findings made (Figure 8).

Tests	**Case Study Tactic**	**Phase of Research in which tactic occurs**
Construct validity	• Use multiple sources of evidence • Establish chain of evidence • Have key informants review draft case study report	- Data collection - Data collection - Composition
Internal validity	• Do pattern-matching • Do explanation-building • Address rival explanations • Use logic models	- Data analysis - Data analysis - Data analysis - Data analysis
External validity	• Use theory in single-case studies • Use replication logic in multiple-case studies	- Research design - Research design
Reliability	• Use case study protocol • Develop case study database	- Data collection - Data collection

Figure 8: Case Study Tactics for Four Design Tests (Yin, 2003, p. 33)

A more precise overview of these four tactics is provided here (Yin, 2003); firstly, *constructing validity* is the establishing correct operational measures for the concepts being studied. *Internal validity* is establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships. *External validity* is establishing the domain to which study´s findings can be generalized. And finally, *reliability* is the demonstration that the operations of a study, such as the data collection procedures, can be repeated with the same results.

In terms of my particular case study, firstly, the study did construct validity by the use of several sources of evidence, such as interviewing different people within the organization and studying articles found and the book written which were based on the firm. According to Yin, "maintaining a chain of evidence helps increase the validity of the information in the study" (Yin, 2003, p. 105). This was achieved through identifying and collecting evidence, and analyzing and preserving the data collected thereafter. I constructed validity by tape-recording each interview and transcribing it thereafter. The transcribed works were organized by topic to make the data more comparable to each other. After transcribing the interviews, they were sent to each respective informant for revision and confirmation, in order to legitimize the data collected. In many of the transcriptions, the informants provided feedback and added information. As such, the information gathered constructs validity. The analysis of the empirical evidence began after this procedure.

Internal validity is the second tactic and concerns the broader problem of inference; i.e. "an investigator will "infer" that particular events results from earlier occurrence, based on interview and documentary evidence as part of the case study" (Yin, 2003, p. 36). It involves questioning the correctness of the inference, and can be problematic for the researcher if the events cannot be directly observed. For example, the thesis has argued theoretically that architecture and design logics of office spaces can facilitate learning and knowledge exchange between co-workers. The investigation relies on comparing or pattern matching the informants' opinions on the effects architectural change had on co-working, which was used to analyze and match with theoretical perspectives put forth.

The third tactic is external validity, and deals with the problem of knowing whether a study´s finding are generalizable beyond the immediate case study. A common complaint about case studies is that it is difficult to generalize from one case to another; "critics typically state that single cases offer a poor basis for generalization" (Yin, 2003, p. 37). Instead, rather than saying that the research is ´replicable´, the external validity of ones research is found in how the research relates theoretically and empirically to other studies (Crang & Cook, 2007; Yin, 2003). It was not possible to interview and sample the entire labor pool of Plasto, for obvious restrictions such as time, scope and feasibility. I find it true that a single-case study offers poorer basis for generalization, since it offers little comparisons to other contexts and real life cases. The generalizations made in this thesis are based on a theoretical framework produced prior to conducting the data collection. Moreover, the thesis´ premises are theoretical

propositions to be tested and related to the findings. Generalization and external validity is henceforth found in relating the theoretical framework to real life context, using Plasto as the case study.

The final tactic of evaluating the case design is reliability, and the objective is to ensure that if a later investigator followed exactly the same procedures as described by an earlier investigator, findings and conclusions would be the same (Yin, 2003). The problem with reliability as Yin here describes, is that this may not be the case because the researcher usually brings his or her own interests, issues, positionality and talents to bear in doing the project. However, as others have argued, someone else should be able to understand how you worked through these issues (Crang & Cook, 2007). Therefore, reliability is found in that the case study procedures are outlined in this chapter. A later investigator should be able to validate the findings based on this methodology chapter.

3.7 Conducting Interviews and Direct Observations

Two primary methods for data collection were used during this study: interviews and direct observations. Note that the interview guides used for this study is found in the appendices of this paper. Firstly, coupled with observation, interviewing has been a primary means through which ethnographic researchers have attempted to get grips with the contexts and content of different people´s everyday social, cultural, political and economic lives (Crang & Cook, 2007). Interviews conducted for case studies can vary in approach, with Yin providing three types of case study interviews: a) *open-ended [unstructured]*, b) *focused interview [semi-structured]* and c) *formal survey [structured]* (Yin, 2003). It seemed clear after designing the interview guides that they resembled what Yin calls focused interviews, which are interviews which are open-ended and conversational in manner, but which follows a certain set of questions derived from the case study protocol (Yin, 2003). Focus interviews are semi-structured, and a main purpose of these interviews is to corroborate certain facts that the researcher might already think is established (Yin, 2003). Indeed, prior to conducting the interviews, the theoretical chapter and modelization of Knowledge Centric Management had already been written for the first draft. Therefore, to a large extent, the interviews were an important measure of supporting the theories already set out previously. Moreover, complex issues can be discussed during semi-structured interviews, allowing the researcher to a

deepened understanding and knowledge of topics covered. This was particularly important for my part, as the topic of study is rather holistic and complex.

Direct observations occurs when the researcher visits the "site" of the case study, where relevant behaviors and environmental conditions will be available for observation. Moreover, "direct observation is often useful in providing additional information about the topic being studied" (Yin, 2003, pp. 92-93). According to Yin, this can occur for example when the condition of buildings and workspaces will indicate something about the climate or impoverishment of an organization. I visited Plasto twice, once on my own initiative for interview purposes and one time as part of the SFI Manufacturing workshop on the 8th of March 2016. During my visits, I had the opportunity to directly observe the facilities and workspaces. Insofar as part of the study was to see how architecture and design of the workspace facilitated learning and knowledge spills, I did indeed make direct observations of this during my visits that were used for the analysis section in this thesis.

3.8 Ethical Considerations

The first ethical consideration concerns the informants. Key considerations here are how the researcher approaches and relates to the respondents during interviews and interactions. Moreover, the treatment of information attained is very important. For instance, it is essential that the researcher make it clear to the informants that they have the option to provide information anonymously. This has twofold reasoning; a) it is of ethical essence that they have this choice so to control and respect the privacy of the individual; b) and b) if they so choose to be anonymous; they may be more willing to deliver information of higher sensitive value (Thagaard, 2009). All informants in this study were given the option of remaining anonymous, with one informant opting to do so. This is seen in chapter four, where the information provided by the anonymous informant is revealed without disclosing sensitive information or any indication regarding the identity of the informant. Moreover, as a researcher, I have a moral obligation not only to my informants to protect their rights, but also to NTNU and my department as a representative of the institute. Any immoral behavior or misconduct on my part has a direct effect on the informants, the university, my supervisor and myself.

For further discussion of ethics, the reliability and validity of my findings needs addressing. Reliability refers to "conducting research in a reliable and trustworthy way" (Thagaard, 2009, p. 198). It essentially concerns whether my research, if conducted by another researcher applying the same methods, would come to the same findings. The treatment and evaluation of data is therefore very important. Validity, on the other hand, concerns the "question of whether the findings represent the reality" (Thagaard, 2009, p. 201). In other words, does my findings have roots in the real world? Again, I see this as being concerned with treating the data correctly. Overall, there is a consensus that any researcher must inhibit a sense of integrity to his work (Hay, 2010).

3.9 Critique of Research Design and Limitations of Study

This section will provide a critique of the research design employed in this study and an account for the limitations of the thesis. Critiquing the research design, firstly, the study design was primarily based on interviews with informants related to the firm. Interviews are a good tactic in terms of targeting and insight, which respectively involves a) focusing directly on case study topic and b) provides perceived casual inferences (Yin, 2003, p. 86). However, interviews are often biased due to poorly constructed questions and reflexivity, i.e. "interviewee gives what interviewer wants to hear" (Yin, 2003, p. 86). The reliability of a semi-structured interview is also questionable, firstly because it is difficult to repeat a focused interview. The questions were set in the interview guides before collecting the data, but each interview required slightly different sets of follow-up questions This is argued to potentially steer the respective interviews in alternating directions (Yin, 2003). The information gained may therefore to some extent vary. Secondly, the depth of qualitative information is difficult to analyze. The researcher must decide what pieces of information from each interview is relevant. Whilst the researcher naturally is to be trusted in having used relevant information, one could argue that there is a weakness in the analysis, as other researchers might find other angles and use of the information.

Another critique to this research design involves its validity. As the interviews were conducted, there was a sense that based on the information provided; the questions asked may have been leading questions to some extent. I found that the answers that the informants gave were surprisingly correlating with what other informants had said. The informants were not given the interview guide prior to the interviews, and as such had no way to predetermine the

answers or in any way collaborate with each other with regards to answering the questions. Because the answers were highly correlating, it made me question whether the wording of each question in the interview guide were *too* leading, resulting in answers which I as a researcher expected to gain. Perhaps even the manner in which I prosed the questions had an influence. The high lack of contradicting or conflicting answers is a concern. Generally the coherency between the findings made can be viewed as a positive sign of an integrated firm that fits well to the proposed framework of this thesis. Based on the overall experience through getting to know Plasto, it is reasonable to assume that the information gained from the informants reflects the state of things, rather than it being a false truth as a result of leading questions.

Direct observations are useful for gathering data on realities and contextual elements of the case. Rather than elements of time-consumption and cost of directly observing conditions, the most relevant aspect for my research concerns issues of reflexivity, i.e. "that events observed may proceed differently *because* it is being observed" (Yin, 2003, p. 86). My intention for visiting Plasto physically, in addition to conducting the interviews, was to observe the office design and landscape as part of the theoretical proposition investigates how architecture aids collaboration and innovative ability through increased interaction. Although I was able to observe and attain a personal experience of the office environment, it can be argued that due to spending limited time there, my reflections of the landscape may be superficial in that I do not have a deepened experience of how this influences creative processes among the employees. I can only base my argument on the reflections made by the employees, who themselves may not have reflected upon this until I brought it up during our interviews.

With regards to limitations of study, the following evaluation is based on the findings that will be presented in the chapter four. One of the main limitations for the thesis concerns the demarcation of informants. The array of informants that contributed to the research largely consisted of people in management and mid-management level. The selection of informants was based on the time and resources available during the writing of this thesis; moreover, the specific selection of informants provided a scope to the research question. However, as mentioned above, there was a higher lack of contradictive evidence present than I originally expected prior to conducing the interviews. Although the research is largely scoped towards the extents to which leadership and management is tied to the organizational learning and firms innovative ability, thereby making managers and mid-level employees key contributors

to the research, interviewing ground-floor employees and technicians would have shed an additional and perhaps different light on the management of Plasto. It can of course be argued that the lower-level employees are not the main innovative driving force, which I believe is the case with Plasto, but which should not be accepted as a general truth. Shopfloor innovation has not been considered thoroughly in this thesis, and is henceforth another limitation in itself. However, it should be noted that at Plasto it seems that it is the mid-level employees who are chiefly responsible for and actively working towards creating and developing new products. Moreover, as a knowledge-intensive research firm, the main innovative drive at Plasto remain grounded in said employees contributing directly to internal and external R&D projects and product development projects. Another limitation concerns the evaluation of relational competence. The degree to which the managers at Plasto are relational competent could have been further tested.

4 The Case Study

4.1 Introduction

This chapter will provide a full account on the case that has been studied for this research. Section 4.2 will cover the case study firm, which is a manufacturing company called Plasto who specializes in injection molded plastic production. The background for choosing Plasto as the case study for this thesis will be further explained. This will be followed up by an in-depth profile on Plasto as a company in section 4.2.2. The purpose of profiling Plasto in this manner is to provide the reader with a deeper understanding of the history of the company, following its establishment from 1955 to present day in 2016. This is deemed important because Plasto´s uniqueness in terms of innovation, knowledge generation and focus on research and technological development, can be said to stem from characteristics set forth by founder Odd Stenerud. In many ways, one could argue Plasto to be highly path-dependent and its historical foundations and mindset seems to have been passed down the generations until current owners. Section 4.3 will present the data collected and the empirical findings made in this research. An in-depth discussion and analysis of the findings will be made in chapter five.

4.2 The Case: Plasto

4.2.1 Background

This section provides an informative background as to why the case of Plasto was chosen and who Plasto are. My interest in knowledge management has its roots from my time at Lancaster University Management School, studying doctrines of industrial organization, 21st century management, human resource strategy and development and strategic management. My intention for the initial thesis proposal was to provide a framework for centralizing knowledge as a strategic, organizational effort of learning, information sharing and innovation for firms. Following the initial proposal and subsequent communication with my supervisor Asbjørn Karlsen, it was suggested that Plasto could be a suitable case for my thesis. Originally a manufacturing company, Plasto has transformed into becoming a research-based knowledge manufacturing firm, that designs, produces and delivers specialized as well as standardized products to a variety of industries. Less research has been done on the company itself. Whilst conducting pre-contact research on the company, I came across a quote from the managing director of Plasto, Lars Stenerud, saying that: "*We belong to a culture where we*

help each other become better" (PEP, 2016). Given that all theories of organization are based upon a philosophy of science and a theory of society (Burrell & Morgan, 1979), it was intriguing reading of the company´s managing director, because it seemed to match well with the proposed framework of Knowledge Centric Management.

4.2.2 A Profile of Plasto

This section will provide an overview of the history of Plasto and who they are today. Plasto is a leading manufacturing company within injection molding in Norway. They develop and produce a variety of thermoplastic products for customers in a range of industries. Their most common product is a capsule platform for fish farms. They actively engage in research, product development and innovation; seen as they are typically involved in the entire development process of each product from an idea to the finished product. Often they develop the products in collaboration with their clients, and boasts of their capacity to work on demanding product deliveries with high precision. Plasto is a third-generation family-owned company, originally established in 1955 by Odd Stenerud. They are situated in Åndalsnes, a small town in Rauma Municipality in Møre & Romsdal County, Norway. Odd Stenerud founded the company on the 5th of January 1955, having previously owned and managed several other ventures. As a serial entrepreneur, he first founded a fuelwood production company, seeing a need for alternative fuel due to shortage in supply of gas during World War II and the occupation of Norway. While profitable during the war, the factory burned down, and gasoline became more accessible in the aftermath of the war. Odd shut down the business and production. However, using his knowledge and attained experiences in the fuelwood venture, Odd Stenerud registered Norway Penholder and ran the production of ballpoint pens, which at the time was the first and biggest producer of pens in Norway (Plasto, 2015, p. 32). Odd Stenerud actively sought inspiration and new knowledge by visiting conventions in Sweden, Germany, Netherlands and England, aside from being an entrepreneur and running Norway Penholder (Plasto, 2015, p. 34).

After much studying and further visits to conventions and factories across Europe, Odd Stenerud decided to sell Norway Penholder to his brother and founded Plasto O. Stenerud in 1955, kicking off more than half a century of innovative plastic production. Through these brief accounts of the businessman Odd Stenerud and his eagerness to learn, it is reasonable to see how the focus on research, development and learning seems engraved in modern day

Plasto. It all started with Odd Stenerud, successfully and patiently building on from experience in other ventures and his continuous search for new knowledge. Indeed, Odd Stenerud was a special man; an inspirator, a dreamer and one who dared to think big (Plasto, 2015). A decade after the establishment of Plasto, they were eventually led to construct a 1000m^2 factory in Åndalsnes in 1969. His son, Knut Stenerud took over the company in 1978 and registered it as Plasto AS. In 1996, the production moved to a new, modern facility of 4500m^2, adding another 600m^2 in 1997. Lars Stenerud and Knut Johan Stenerud took over the company in 2005 after their father Knut Stenerud, and recently celebrated the Plasto´s 60th year anniversary in 2015 (Plasto, 2015).

Plasto is today fully automated in terms of production, with their facility housing 25 robots, 20 injection-molding machines and 42 employees[3]. The machines have the capacity to run 24/7, depending on demand, and runs unmanned shifts during weekends, with employees having access to live-updates of production statuses via an app on their cellphones. As was mentioned above, Plasto has transitioned from being a mere manufacturing company to becoming a research-based knowledge-manufacturing firm. They collaborate closely with leading development milieus in process- and material technology (Plasto, 2016). Furthermore, they take part in the whole development process – from a formulated idea to a finished injection molded product of plastic. By focusing on research and problem solving, Plasto has the competence needed to work with demanding deliveries with high precision (Plasto, 2016). In terms of markets in which they operate in, Figure 9 provides an overview of the respective sectors they currently deliver to:

[3] As of February, 2016

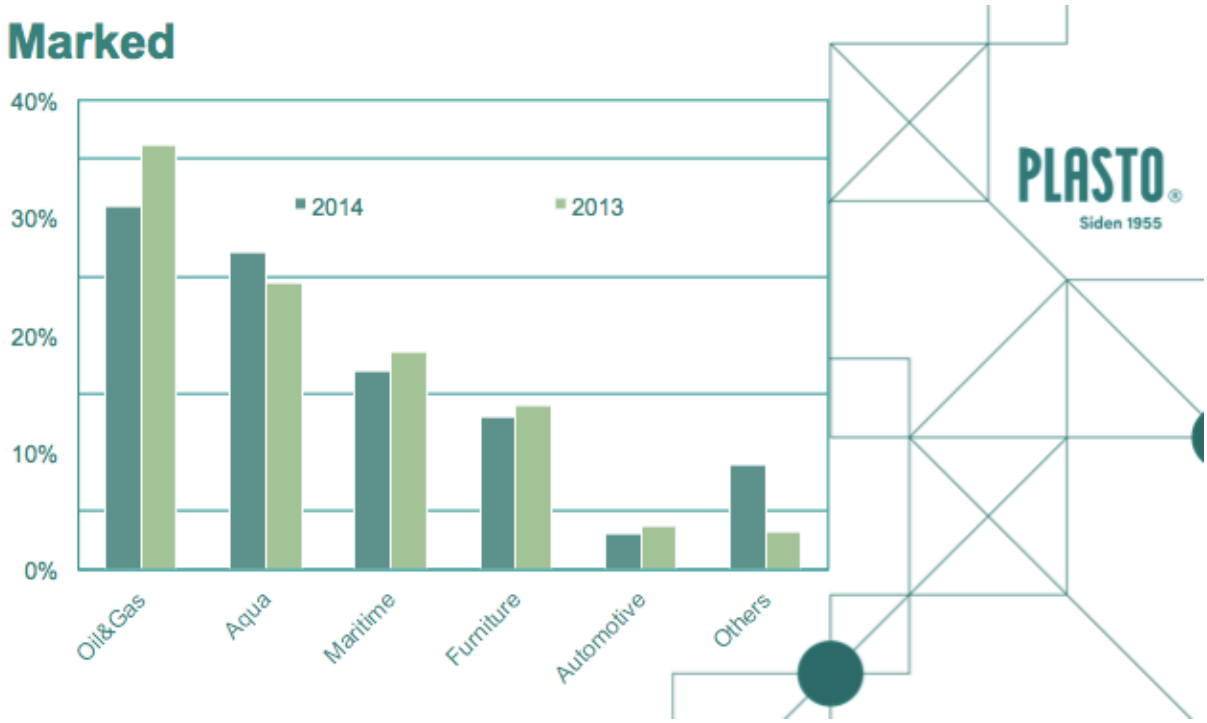

Figure 9: Plasto´s Market Portfolio, SFI Manufacturing (Plasto, 2016)

As observed in Figure 9, Plasto´s current deliveries of products[4] are largely centered on to sectors of oil & gas, aqua and maritime, which makes up approximately 80 percent of their portfolio. Their remaining market portfolio consists of furniture, automotive and other sectors. Plasto has undergone major developments since the Stenerud brothers took over. In an interview with iKuben Lars Stenerud explained that in the past 10 years, Plasto have gone from the bottom of the industrial value-chain to near the top; delivering not their own products, but products produced *together* with and for their clients; and their clients shall be market leaders (iKuben, 2015). The approach taken to achieve this has largely been based on principles of possessing scalable technology and keeping ones eyes open; that is, see what technology others around oneself uses, either in completely different industries or in related industries, and use what one learns from this in a way that is appropriate for oneself (iKuben, 2015)

In terms of the labor force in Plasto, Figure 10 provides a percentage overview of the allocation of employees. As of early 2016, 49 percent of the employees work within productions, 29 percent of employees work in production technology, 11 percent work in

[4] As of February, 2016

administrative positions, whilst the remaining 11 percent work in R&D. Furthermore, in terms of finances, they had their best fiscal year in 2014 with a reported turnover of approximately 110 million kroners, with the turnover prognosis for 2015 being approximately 85 million kroners.

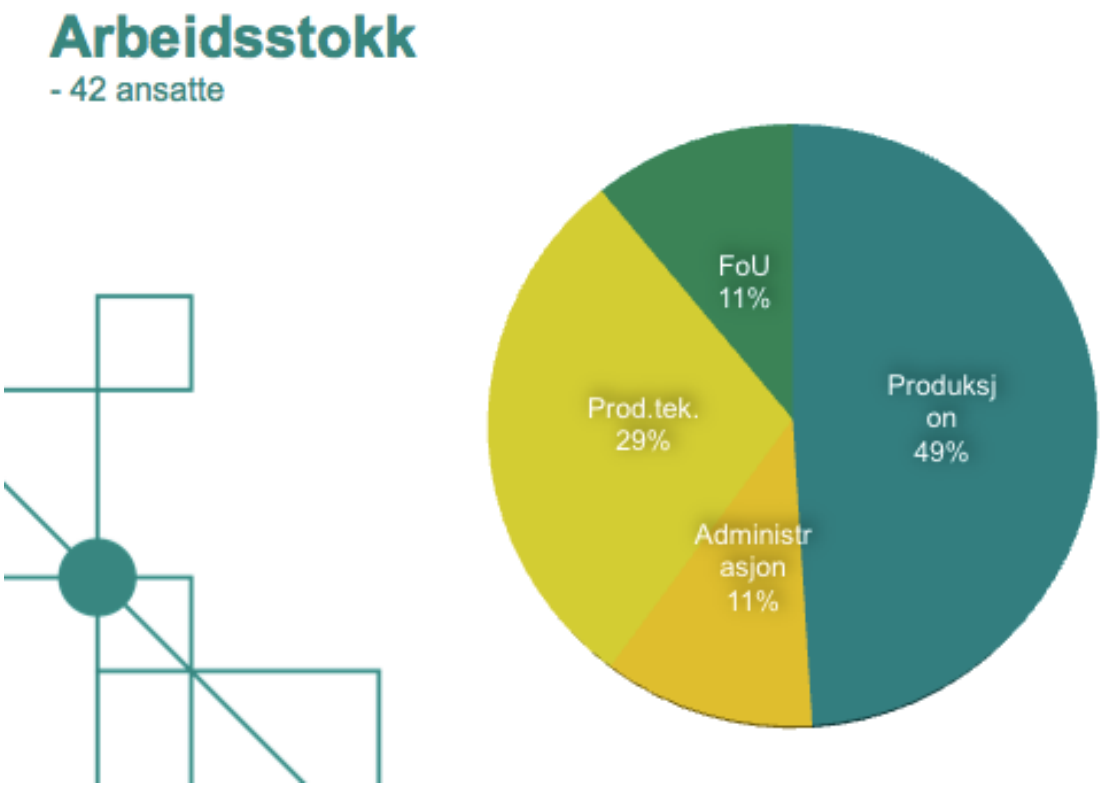

Figure 10: The Labor Force of Plasto (Plasto, 2016)

Plasto describe themselves as a "lighthouse in connectedness with research, innovation, networking, high-end technology and automated production" (Plasto, 2015, p. 8). The Stenerud brothers, Lars and Knut Johan, are the owners of Plasto with a 51 percent and 49 percent stake each respectively. The slight difference in ownership is just a matter of legislative formality however. Where [Lars] is "the ´foreign minister´ and managing director, [Knut Johan] is the ´internal minister´ who is turned towards the factory and productions; and every government needs both minister position" (Plasto, 2015, p. 8). Indeed, the overarching strategic approach of Plasto is signified by keywords such as a local-global approach, cooperation and networking and identity. Their strategy is to keep the business and production

locally tied in Åndalsnes, and through "strong networks within technology, research, education, clients and suppliers, identify new ventures, seize these and create results that have not been realized before" (Plasto, 2015, p. 70). Fittingly, the name of their book is "*What was yesterday and today, shall not be delivered tomorrow"*, and in one sentence seems to capture and summarize the company as a whole quite accurately.

4.3 Presentation of Data and Empirical Evidence

Having introduced Plasto and provided an overview of its history, the following section will present the data and empirical evidence that was extracted following the data collection and visit to Plasto in February and March of 2016. The presentation of the findings will be provided as a combination of transcribed text and direct citations from the interviews, with complementary descriptions. The analysis of the data will follow in chapter five. The section is divided into several sub-categories. The first section will provide an overview of the informants included in the study. Given that the majority of the informants have agreed to be included in the study with full disclosure, a more in-depth account of each informant and their respective positions in the company will be provided in the section 4.3.1. This section is further divided into the following sub-categories (4.3…); 2) Managing and Leading Plasto, 3) Knowledge and Knowledge Management, 4) Networked Knowledge, 5) Learning in Plasto and 6) the Future of Plasto. This divide of sub-categories has been chosen in accordance with the thematic breakdown of the interview guides. As a last point, at the end of each section a figure will be provided which bullet-points the main findings from each topic covered in the interviews.

4.3.1 Informants in the Firm

This section is dedicated to introducing the informants and their respective roles in the company. Below is a table listing the informants that is included in the study and their respective positions at Plasto. Five of the informants gave permission to be disclosed and presented with full name and position. One of the six informants opted to stay anonymous.

Table 1: List of Informants (Author´s own table)

Informants in Plasto	Position Held at Plasto
Lars Stenerud	Managing Director
Roger Grande	Production Manager
Øyvind Bjorli	Project Engineer
Ole Martin Sørli	Improvement Engineer
Ole Vidar Lyngstad	Chief Research Officer
Informant A	N/A – Informant anonymous

They first informant is Lars Stenerud, Managing Director of Plasto. He holds an MSc in Engineering. He is the co-owner of Plasto, owning 51 percent of the stake in the company. Stenerud has been permanently employed at Plasto since 1990, but also worked as an intern and during his studies in the 1980s. Stenerud further explained that his role in the company as a managing director, internally involves overseeing and contributing to potential difficulties that may arise. His role also has a strong, external fashion where a lot of time is spent on building and maintaining strong relationships with clients, research institutions, partners and material- and technology suppliers. Furthermore, Lars Stenerud´s main responsibility is as head of Sales and Marketing.

The second informant is Roger Grande, who holds the position of Production Manager. Grande is 56 years old and has worked 34 years in the plastic industry. In terms of education, he holds a high school diploma and a certificate of apprenticeship. He has only worked at Plasto for 1 year and 5 months of his 34 years as a professional, having previously held a similar position at another company within the plastic industry. His main responsibility is to oversee the manufacturing process and ensuring that the clients get the products they ordered. He is the Head of Personnel in the factory and Head of the Logistics department. This involves overlooking the weekly order situation, outlaying the production plans for each week; tweaking and re-organizing production plans if a customer wants a speedier delivery. In general Grande said he keeps updates on the production plans.

The third informant is Øyvind Bjorli, who holds the position of Project Engineer. He holds an MSc in Civil Engineering from former Norwegian Institute of Technology (NTH), now a part of Norwegian University of Science and Technology (NTNU). He is 46 years old, and finished his education in December 1994. He worked for a shorter period at Mandals AS, where he constructed fire hoses. He has since been a part of Plasto since March 1997. His main responsibilities are to manage projects that are allocated. When an order or a new project is received, Bjorli is typically responsible for estimating prices, estimating delivery times, designing the products and calculating production costs. Sometimes these projects involve the production of standardized projects, for instance to clients like Volvo in the automotive industry.

The fourth informant is Ole Martin Sørli, who holds the position of Improvement Engineer. He holds a higher education degree within IT and is 34 years old. He started off working for a company formerly called Wenaas, now called Kwintet. He joined the Plasto team in 2007 as an MA-manager handling purchasing, logistics, materials and administrative duties. He was promoted to his current position in 2014. His main responsibilities are within organizational development. He works a lot with LEAN production and 5S, which means that he organizes the workspace for efficiency by identifying and storing the items used, maintaining the area and items, and sustaining the new order. He also oversees the quality management system of Plasto.

The fifth informant is Ole Vidar Lyngstad, who holds the position Chief of Research. Holding a Master in Mechanical Engineering from NTNU, specializing in Production and Product Development. Lyngstad has a 50/50 percent position as a researcher at SINTEF and Chief of Research at Plasto. His main responsibilities revolve around administrative duties in various projects that Plasto work on. He also contributes to technical assignments at Plasto. Lyngstad follows up on activities Plasto has and is in charge of ensuring that Plasto delivers on commitments made in projects.

The sixth informant has chosen to be anonymous and will be referred to as Informant A. The position and tasks of the informant will not be disclosed in accordance with the informant´s wish of anonymity. The individual's relatively young age and few years of employment at Plasto made him/her a core informant and a particularly important informant compared to the

others due to shorter tenure at the firm and on the subject of learning benefits since joining the company.

4.3.2 Managing and Leading Plasto

Having introduced all the informants of this study, we move on to the presentation of the data. In this first section, the theme revolves the management and leadership of Plasto. The purpose of this section was to expose what categorizes Plasto as an organization, what type of leadership characterizes the management and the values that are held important within the firm. We begin with a quote from one of the key informants in the study, Managing Director Lars Stenerud:

> I lead this company, but I have a strong philosophy that the various departments are self-organizing and self-operable. In principle, the ones who are managers within their fields are in charge on a daily basis. It is sort of like being a general, when important battles are carried out, you outlay a plan, but when that plan is to be executed, much of my job is done. (Stenerud, 2016)

On a general basis, it seemed that the organizational setup at Plasto is categorized by a flattened hierarchical structure. Indeed, when talking about the degree of interaction between management and employees, Stenerud made it clear that in practice Plasto does not enforce hierarchy in the organization. They possess an organizational chart and formal positions, for a purpose that is limited to a mere formality. Positional empowerment, such as power relations between director contra subordinates, is of little importance to Plasto according to Stenerud. As Stenerud pointed out, *I have a leader group that meets every two weeks, and we try to have a style of running the company where decisions are made at the lowest possible organizational level* (Stenerud, 2016). He claimed that in doing so, decisions are made much more efficiently. He added that *the board pinpoints the goals and ambitions of the company, and have complete faith that the leader group has the information and competence to navigate thereafter* (Stenerud, 2016). This, Stenerud added, transcends from the management, to the middle managers, to the end resource. Furthermore, Stenerud believes the work place becomes much more interesting for the people working within it, in that the chain of command is more spread and real contribution is felt across the entire organizational chart. Chief of Research Ole Vidar Lyngstad noted that the organizational structure is very flat at Plasto and that the management is highly present in the work landscape. *The management is constantly present, sitting amongst everyone in the administration* (Lyngstad, 2016). He noted that there is no distinction in the form of hierarchical ranks; the managers are equal to

everyone else in the organizational chart. When asked to what degree management allows employees to steer their tasks independently, Lyngstad claimed that there is little micromanagement at Plasto; project engineers are largely responsible for their own client portfolios and projects. Indeed, one engineer described the management at Plasto as *inclusive and open, the kind of leadership I value* (Sørli, 2016). This seemed to be the case also in conversation with one of the other engineers at the company, Øyvind Bjorli, who claimed to have a strong relationship with the management. *I am allowed a great deal of freedom in my work and I am allowed to take charge of the projects I work on. The instances where management meddles or interferes with my work, is when I myself approach them and ask for advice on procedural matters* (Bjorli, 2016). Bjorli elaborated on the fact that if and when management interferes, it largely involved cases of strategic concern. To a large extent, there was little sense of restriction or formalities in the way an employee conducts work at Plasto. On the contrary, as Bjorli said,

> It is not the case that one is uncomfortable as an employee to question the way things are run. Lars and I may disagree on a solution, and often what happens is that we discuss our way towards an even better solution than we both originally had (Bjorli, 2016).

As the production manager, Roger Grande holds a positional role in the management group of Plasto. He stated in our interview that *I have a good relationship with all employees. This is mainly built around trust (...) I think there is a balance between [being a person-oriented leader and result-based leader]* (Grande, 2016). He went on to describe how one cannot achieve good results and maintain excellent production records without having all people on board. He described it as pulling as one unit. Describing himself as a leader, he claimed *one should have a friendly tone to your employees, but they should also be aware of who is in charge. Sometimes I can be very tough, but fair in my approach* (Grande, 2016). He remained clear however that you do not get what you want from people by using *fear or "hardmanship"*. Having only been employed at Plasto for approximately 16 months at the time of our interview, Grande noted that in terms of his managerial position *respect needs to be earned [over time] and is not something that can be enforced* (Grande, 2016). Upon reflecting on the value of appraising employees as resources, Grande said he always tries to praise more than he whips. In general he expressed that he was conscious about giving praise and recognition where it was due. This could occur in formal settings such as performance appraisal meetings, but also informally, for example if an employee has distinguished him- or herself in a particular manner they are more than likely to hear positive feedback quite

promptly. As Grande says, *it is the small gestures [that are important]; if you have the opportunity to praise, do it* (Grande, 2016). Appraisal and making people know they are doing well seems to be a core value at Plasto.

> When we have achieved something that is good, we make a point of recognizing it. We value greatly the provision of recognition and acclaim. Plaudits are a good driving force, and we view it as justice to give and receive proper acclaim where it is due. (Stenerud, 2016)

Lars Stenerud expressed that as a managing director he is very much concerned with getting results, and that as a business they must have and incorporate set goals to ensure the survival of the firm over a longer period. When reflecting upon whether he is more people-oriented or production-oriented as a manager, he made a point of the importance that the firm makes profits that can be reinvested, in combination with having people loving what they do for a living. He said,

> I am probably a very technology-oriented leader, but I am very aware of the fact that it is the people who make the difference. Anyone can buy and install the production machines that we have, but the way we use the machines are unique, and it is our people who do this, and that is what creates value (Stenerud, 2016).

Stenerud claimed that the most important difference between Plasto and other similar firms, are the people of the organization. He describes his workplace as a safe environment, socially speaking. *Nobody can be safe in terms of how the markets shifts and what impact that has on the company, but people are very happy working here* (Stenerud, 2016). Work-related sick leave rates are generally low, Stenerud adds. Being a smaller company, it is usually quite transparent if the work environment causes sickness or illness of any kind. Henceforth, it is easier for Plasto to make specific arrangements for the employees if need be. Having a shorter tenure as an employee compared to the rest of the informants, Informant A noted that in the beginning of his/her employment at Plasto, *the management observed you, looking without applying any stress. They do expect you to present something in time*. However, the observation is not seemingly a pressure-mechanism. As Informant A noted,

> They wait without pushing you; they know that sooner or later you present something. I know from [previous employment] that pushing is not good. The way things are run here, there is a lot of trust in people. They give you knowledge and all the tools, in addition to personal freedom, trust and know-how.

Informant A made comparisons to previous employment and noted that opposed to his/her experiences there, the management of Plasto expects results, but within conditions of freedom and support. According to Informant A´s experiences, they impose a great deal of trust in their employees to deliver. *It is very easy going here and the social behaviors stand out in comparison to other companies. [For example] every Friday people come together and we spend time together socially,* Informant A said. Informant A was in the opinion that the management has a plan and idea about creating a team and what they want. *It is a well-working* machine, Informant A said, *people have been working here for more than 40 years – it is a sign that that [the management] is successful.* This stands to testify for what Stenerud and Grande from management claims to aspire for.

Table 2 provides a summary of the findings made for the first theme, Managing and Leading Plasto:

Table 2: Key Findings: Managing and Leading Plasto (Author´s own table)

Leadership Characteristics	**Culture and Values**	**Organizational Characteristics**
- Open and inclusive leadership - People-oriented leadership - Technology- and result oriented leadership - Managers are approachable - Power is shared	- Self-operable employees - Employee freedom at work - Plaudits are given when due - Mutual trust and respect	- Non-formal, flat organizational structure - Non-hierarchical - Management group meets biweekly - Low-ranked decision making

4.3.3 Knowledge and Knowledge Management

One of the central themes of the study is how the firm sees, thinks about, manages, uses and experiences knowledge and the exchange of knowledge. The central aim of this section is to provide an account for the perceptions of knowledge and knowledge exchange that key actors of management in Plasto have. This would also give some clues on what type(s) of leadership and characteristics that the director and managers represent.

> Knowledge, competence, and skills (…), the sum of these matters are your tools for solving problems (Stenerud, 2016).

When asked about the value and purpose of knowledge sharing and exchange, Lars Stenerud expressed that knowledge sharing is only valuable in the academic sphere *before* it is commercialized. *It is when knowledge is commercialized, that value is created in the shape of re-investments* (Stenerud, 2016). Stenerud made a point that knowledge sharing for them as a business is to extract new inputs and possibilities and turning it into contexts relevant for the company, which is then combined to solve problems. *Knowledge is never "used up"; it only grows* (Stenerud, 2016). His main point was that to share knowledge is a pre-condition to knowledge being utilized into something commercial. *By being open and sharing our knowledge with others, we, in return, receive much valued knowledge* (Stenerud, 2016). It is for this reason that Plasto are so heavily involved in research and development. Insofar as part of their strategy is to research in collaboration with clients, Stenerud was under the impression that a lot of knowledge exchange is channeled through these collaborations. He further noted that Plasto is acutely aware that there is a lot of tacit knowledge that remains one of their biggest challenges; namely how they can make tacit knowledge into lasting and documented knowledge.

Stenerud made a point during our initial meeting that I might get very different answers in my interviews to questions surrounding knowledge exchanges at the company. He seemed to propose that concepts of sharing knowledge, experience and interacting in a meaningful way in terms of learning, lied in Plasto´s DNA, but that they were not necessarily conscious about it. However, when asked to define knowledge in relation to their work, there was a general consensus among the informants that for Plasto as a medium-sized firm, investing heavily in research and development projects and continuously working on developing themselves as individuals, knowledge exchange and effective implementation is an integral part of their process and success. Project Engineer Øyvind Bjorli explained that because of the relatively small company size, people who work on their different projects always pay attention to other projects that are worked on across the company and quite often one are pulled in to the various projects. As he noted,

> Even though there is a project I am not involved in, I sometimes participate in discussions with the various, respective project managers on how they work and vice-versa; they are included to provide comments, advice and discussions on various elements of the projects I work on (Bjorli, 2016).

In other words, there seems to be a natural flow of sharing and contribution in the environments at Plasto. Bjorli continued, saying

> Similarly, the toolmakers, the automation experts, the specialists on injection molding (…) they all use experience and knowledge from projects I have not necessarily participated in, and share these. Everyone [at all levels of the organization] have a good overview of everything that is worked on at Plasto (Bjorli, 2016).

Informant A expressed that the members of the organization were very open. It was noted that *without getting the guys and me together, there would not be any projects. [It is not the case] that someone wants to keep things for themselves, and that is why I have managed to have some successful projects*. Informant A claimed that Plasto has everything needed to develop great projects, from the idea phase to the production phase. Furthermore, the close interaction and collaboration with clients when working on projects, increases the self-belief and confidence of oneself, according to Informant A. As a last point on this topic, Informant A noted that despite being a bit of an individualist in terms of work, close collaboration with colleagues and external clients has had great impact on Informant A´s personal and professional development.

When asked how the management works towards enhancing knowledge exchanges, Production Manager Roger Grande noted that Plasto encompasses a broad specter of high-level specialized workers. Among the areas in which employees specializes in are mechanics, injection molding, automation experts, electricians. Grande noted that because of the broad array of specialists, systematizing and arranging for employees to develop their field competencies is particularly important for Plasto. Methods of doing this seem to be both traditionally and untraditionally done at Plasto. Firstly, in terms of traditional methods, competence development is accompanied for by sending employees to participate in non-mandatory seminars, training courses, conferences etc. Moreover, Stenerud noted that for their more educated employees, such as the engineers, Plasto has a service- and development program where employees have the opportunity to add to their educational backgrounds and upgrade their skill sets. In addition to this, the employees participate in research projects and develop their products in collaboration with clients; therefore they are exposed to new knowledge continuously. This has had great influence on competency development and innovative ability of the employees, according to Øyvind Bjorli. When talking about the role

of collaboration with external actors in terms of competency development and innovativeness, Bjorli said that

> The client is always important. All the inputs from the clients are what make the products great in the end. Sometimes our clients even have a third-party involved in the development process [consultancy/development firm], which handles the construction of the plastic parts, but we are still actively part of the development process (Bjorli, 2016).

This is a good example of a collaborative effort between Plasto, their client and a third-party, where knowledge is shared and exchanged as part of the developing of the products. It exemplifies how knowledge can be shared as a systematic process.

Secondly, knowledge exchanges occur in less systematic processes at Plasto. Head of Research Ole Vidar Lyngstad noted that it is a bit typical Norwegian work life and industry that one has an open and dialogical sphere within and across companies. *For me, knowledge exchange is to not protect core-competencies to create advantage for oneself; rather, playing with open cards will make one move on to new things [quicker]* (Lyngstad, 2016). In terms of knowledge exchange within the company, it is less a formal process and more of a natural way of working together. He made a point that all companies would like to formalize and structure the way in which knowledge is stored and shared. At a previous company, Lyngstad had participated in building a knowledge base, used as a sort of summary from all previous projects. Typically the way these knowledge bases work is that for each project that is finished, employees have documented all solutions, changes and problems that may have occurred along the way so that whilst working on new projects, people can search back in time to find solutions. Lyngstad noted that whilst the intentions of knowledge bases are good, it is difficult to incorporate a systematic process where engineers and other employees log what they have done. *Knowledge exchanging is generally quite difficult, but I believe it to be far more easier the smaller the size of a company is* (Lyngstad, 2016). Although Plasto do not have a formalized structure such as a knowledge base, they have an open landscape, where everyone can hear everything. This automatically makes them more adapt to exchanging knowledge.

> We are interested in learning; we believe knowledge is the critical factor to succeed (Stenerud, 2016).

Table 3 provides a summary of the key findings made for the second theme, Knowledge and Knowledge Management:

Table 3: Key Findings: Knowledge and Knowledge Management (Author´s own table)

Perceptions of Knowledge From Managerial Position	Perception of Knowledge from Employee Position
- Valuable only once commercialized - Critical success factor - Sharing knowledge is a pre-condition to commercializing it	- Consensus that knowledge exchange is integral - Client-cooperation generates new knowledge - Exchange of knowledge is easier in smaller companies - Knowledge exchange develops oneself; personally and professionally

4.3.4 Networked Knowledge

The following section focuses on management and the firm´s position on accessing new knowledge and experiences on a local and global level. The aim was to see whom they typically absorb information and knowledge from, how they approach this, to what degree this gives value to the company in terms of production and development and uncover any potential barriers to networked knowledge exchange.

> As a smaller company, we are really just one island in the big sea. Seeking new knowledge in networks is a critical success factor (Stenerud, 2016)

Plasto´s strategy is strongly linked to research and development in collaboration with their clients and partners. They actively seek out new knowledge through a variety of arenas. One particular example of this was made when interviewing Stenerud. This concerned one unnamed employee at Plasto who is a specialist and has main responsibility for robotics and automation at the company. He actively participates in NFA (Norsk Forening for Automasjon), the Norwegian Automation Association, and attends their meetings. In this

way, Plasto upholds an active position to sources of new knowledge specific to the automation and plastic industry. This specialist invites RobotNorge, an organization dedicated to delivering robotic related products and services, to attain insights on the robotic side of production. He may also invite similar organizations, such as Siemens, to get insight on new developments within automation system. As Stenerud noted, *our raw material suppliers are one of the most important sources of knowledge when it comes to plastic* (Stenerud, 2016). In addition to this, Plasto actively plays a role in research programs facilitated by universities and research institutes. They collaborate closely with universities like NTNU; they invest and take part in research projects lead by SINTEF, whilst also collaborating other independent research projects such as SFI Manufacturing.

> Our strategy is to research and develop [new products and solutions] in collaboration with clients; therefore we share a lot of knowledge with our clients. Along with that comes knowledge production and generation. I personally think this is the future model for building knowledge in Norwegian companies (Stenerud, 2016).

According to Roger Grande, Plasto is perceived to be one of the frontrunners in Norway on research and development. *It is something we actively seek [research and development], and if you attain enough information, you sit upon a knowledge base* (Grande, 2016). The importance of participating and investing time and monetary resources in R&D does not seem to be taken light-hearted at Plasto, notably as Grande explained that even if what one attains of knowledge from participating in projects and collaboration with other institutions and partners, is not put to use immediately or in specific projects, one still is left with a renewed hub of knowledge. This does not disappear, and can be useful later on in different projects.
Indeed, Informant A shared similar notions with regards to re-using knowledge in later projects saying,

> When you manage to make one product successful and the customer get what they want, you get more faith in yourself (…). The clients open up and put more effort in sharing knowledge with that they didn't share before. Valuable connections can help you in later projects.

Stenerud claimed that a majority of the situations where knowledge is shared between research institutions and Plasto are in organized settings. He referred to it as "work-packages", seeing as how they work collaboratively, a lot of knowledge is spilled in organized fashion through meetings, official reports, work tasks and shared milestones with the research institutions. With other firms, partners and competitors, Stenerud noted that knowledge spills occur more informally and unorganized. He claimed that Plasto has

analyzed and looked into how they can document these instances, so to convert tacit knowledge into something utilizable. It was recognized that,

> Most of the people in this world do not work for Plasto; therefore we must be aware and monitor movements and developments across the world that we find ourselves in. We cannot screen the entire world for information, but the least we can do is get help from others to secure that we hit the nail on what we work on (Stenerud, 2016).

In addition to extracting knowledge from their own investments in research and collaborating with universities like NTNU and research institutions such as SINTEF, Plasto attains new knowledge from directly collaborating with clients. The majority of their projects are designed from start to finish together with their clients. This is to ensure that each product satisfies every technical requirement of the client. In some cases, for instance with projects delivered to clients like Volvo in the automotive industry, the production largely involve standardized products. In such instances, Bjorli said there is limited creative freedom involved and duties are mainly about calculating prices and molding shapes and production. However, because Plasto possess much knowledge and experience, they often have opportunities to make smarter products. Bjorli noted in the beginning of our interview that in recent years, *more and more projects have involved early phases where he can heavily influence how the products should be and handle production more rationally* (Bjorli, 2016). This is typically done in collaboration with the clients, where Bjorli noted that *they discuss how the plastic materials can be designed and shaped so to effectively produce them and meet the requirements the clients have in terms of functionality etc.* (Bjorli, 2016).

Chief of Research Ole Vidar Lyngstad believes that cooperation and interaction with external actors has been essential to Plasto´s competence development and innovative ability. *One factor that indicates this is their product portfolio – it is constantly changing* (Lyngstad, 2016). This is an important point. If there are shifts in market demands for certain products, there is usually a balance. One product may drop in demand, whilst another increases. In addition, Plasto increasingly develop new products. Lyngstad claims Plasto would not have been as successful had they been merely a passive producer. Instead, they actively engage in research and contact with external actors such as clients, producers, R&D institutes etc. When asked if there is anything that might hinder knowledge exchange, Lyngstad pointed out that a lot of the research projects occur outside of Plasto, thereby, the knowledge generated from research to some degree is situated outside of the company. He pointed out that there is

potential for improvement for flow of knowledge between a research project and organizational projects.

Table 4 provides a summary of the findings made for the third theme, Accessing and Extracting External Knowledge.

Table 4: Key Findings: Networked Knowledge (Author´s own table)

Network: Accessing Knowledge	**Value of Networked Knowledge Absorption**	**Barriers and Negatives to Networked Knowledge Absorption**
- Engaging in specializing associations, e.g. NFA - Raw-material suppliers important source - Research Institutes, e.g. NTNU, SINTEF etc. - Collaborating w/ clients	- Capacity to quickly change products - Efficient adaptation to market shifts - Monitoring developments - Increasing internal knowledge base - Internal knowledge generation - Valuable connections increases quality of future projects	- Externalized research projects; knowledge is kept outside of company - Formal setting of sharing knowledge is not in place - Improvement for flow of knowledge between research projects and internal organizational projects

4.3.5 Learning at Plasto

This section takes on the topic of learning at Plasto and to what extent they thrive as a learning organization. The major issue that was to be uncovered during the data collections was how the company is set up to encompass a learning environment. Through the interview process, the goal was to discover to what degree the people in the organization reaped learning benefits during work, in what way the management facilitates for learning to occur and what impact learning has had on the company´s innovative ability.

> We are very concerned with continuing to learn as an organization. “Speed of Learning” is a term that I think will be important in the future when talking about innovation. The ability to utilize knowledge faster than others will be critically important in the future (Stenerud, 2016).

There seemed to be general consensus that Plasto is an interactive and collaborative organization and work place. In general Roger Grande felt his responsibilities mainly involved *individual tasks, but that in certain cases where for example the development department comes to me with a message from the client, there is communication across teams. The set up here allows people to be easily accessible* (Grande, 2016). Project Engineer Bjorli however noted that a lot of the tasks are done in teams, saying that

> We all know something about a lot, but in terms of details of for example how a plastic part should be, the toolmaker is a specialist so I seek him out for specific advice. We always pull in those in the company who are experts in their fields when working on different things (Bjorli, 2016).

Indeed, Ole Martin Sørli stated that a lot of his work responsibilities involve teamwork, claiming that *there is no use for him saying this is what we should do; a lot of collaboration and [collective] coordination is needed to develop ourselves and improve* (Sørli, 2016). The sense of a glued together, collaborative working environment is no accident according to Lars Stenerud. Stenerud noted that in terms of work tasks at Plasto, *the tasks are almost always occurring across teams and departments. We are usually very glued together in work, and it is rarely one man who is allocated a task. Usually there are contiguous tasks, and there are several people working together* (Stenerud, 2016). Chief of Research, Ole Vidar Lyngstad, felt that the management of Plasto has done well to facilitate for open and good communication among projects. Being employed at Plasto has reaped great learning benefits for himself, noted Lyngstad. Plasto has a relatively open office landscape, which Lyngstad said helps ease interaction between co-workers. Lyngstad said he considers Plasto to be a learning organization. Lars Stenerud noted that learning benefits are generally reaped in a dynamic process working on projects. *The production technology team, for instance, learns through continuous exposures to new problems* (Stenerud, 2016). Stenerud was of the opinion that innovation was engraved throughout the entire organization of Plasto, because the development team is an extension of the development department of the customers. *The technical production team must continuously develop and combine new technologies and processes that we possess to solve new problems and needs for our customers* (Stenerud, 2016). Therefore, learning benefits are organized in projects and in collaboration with both customers and R&D partners, Stenerud noted.

As a younger person, having a shorter tenure as an employee at Plasto compared to the other informants, Informant A explained that he/she has excelled and developed greatly since

joining the company. Informant A drew comparisons to his time at Plasto versus his previous employer, also a plastic manufacturer company, claiming that the main difference from Plasto and the previous employer, was the open culture at Plasto, its experienced and reliable co-workers and willingness from co-workers to answer any inquiry one may have. Informant A continued by expressing there is *a sense of freedom and a lot of courage [at Plasto], and experienced colleagues around you make this place a great arena for learning and exchanging knowledge; I am constantly absorbing knowledge from team members*. It seemed clear when talking to Informant A that he/she had gained plentiful in terms of experience, knowledge and personal development as a result of working at Plasto. This seemed to be the case both informally, in terms of cultural setting and mind-set of Plasto, but also formally in terms of being sent to exhibitions, lectures, and seminars with actors of the plastic industry. When asked about the design of the office environment and any influence that may have on learning benefits, Informant A again tracked back to his/her previous work place. *Previously, I had a very luxurious office (...) it doesn´t make it better if the atmosphere is bad. The atmosphere here makes it much more easier to cooperate*. Informant A said that despite the openness triggering increased interaction between co-workers, as an individual he/she preferred a more closed environment, not being ´that´ watched and being allowed to work more privately. That being said, this is more the persona and preferences held as an individual. Informant A acknowledged that there is a great deal of trust at Plasto, and that despite being observed in the beginning, the management provide a great deal of freedom, not forcing employees on how one is to develop products. The key here, as Informant A said, is *handling that freedom*. As a final point, Informant A claimed working at Plasto had been a bigger learning curve than previous employment had. This, Informant A claimed, is due to the combination of learning with co-workers, growing self-confidence and making successful products.

Demonstrating a clear philosophy on the importance of generating new knowledge in the quest to survive and innovate, Lars Stenerud made it clear that they invest heavily both in terms of money in research and time into attaining new knowledge. This is seen in that 80 percent of Plasto´s products as of 2016 have been developed within the last 5 years and are categorized as “new”. This signifies a highly innovative company. Stenerud noted that after visiting Silicon Valley and studied how work procedures are set up there and talking to social anthropologists from multinational consulting firm Ideo, he gained inspiration to change how the Plasto office landscapes is designed in order to enhance learning capacities. From a

managerial perspective, Stenerud admitted that he had strategically engaged and altered the landscapes of the office facilities in Plasto, to open possibilities for increased interaction between employees. When asked about the construction of the workspaces and offices at Plasto, he noted that *in the past, we had separated workspaces and offices. We now have meeting rooms that are integrated in the work environment; we call it an innovation library* (Stenerud, 2016). The area where the engineers work and develop products was previously an enclosed environment where each engineer held their own offices. The walls were eventually deliberately taken down and replaced with a more open landscape. It was Lars Stenerud who initiated this process. This was done in order for the engineers and developers to be able to engage with each other to a heightened degree. Project Engineer Øyvind Bjorli is part of this particular group of engineers and he was of the opinion that

> Physical efforts have been made to improve interactions. I do not participate in every discussion that happens around me, but I gain experience just by listening even when I am working on something else (Bjorli, 2016).

He added that the only negative effect from having such an open environment was in cases where one has meetings over the phone, but moving to one of the meeting rooms easily solves that. These measures of facilitating the surroundings of which work takes place, have apparently improved not just the case of learning at work but also seemingly the efficiency of collaborative projects. Bjorli noted that in earlier years,

> We have had systematic project meetings where everyone came to work together. The problem with this way of working is that one could have 20 projects on the table, but we only reached project 2 due to discussing and solving a lot of technical details. We therefore never seemed to reach the end of projects when we worked in this way (Bjorli, 2016).

Bjorli was under the impression that once they shifted away from the formalized, collaborative ways of working, and moved towards a more informal, collaborative approach, efficiency in problem solving and project deliveries was improved. On the production side, Stenerud said *we have incorporated the departments for order receives, planning- and purchasing and production management, so they sit in a section where they can easily access each other* (Stenerud, 2016). This deliberate and strategic act of management was an important discovery, because it demonstrated a clear and strategic approach for Plasto to be an integrative, sociable and learning work place.

> The point [of the facilitation of social and integrative landscapes] is that one subliminally hears things around the office and unknowingly participates. By doing so, knowledge and information is shared and spread (Stenerud, 2016).

Table 5 provides a summary of the findings made for the fourth theme, Learning at Plasto:

Table 5: Key Findings: Learning in Plasto (Author´s own table)

Degree of Learning	**Facilitation of Learning**	**Indication of Learning and Innovation**
- High degree of learning - Steep learning curve - Absorption of knowledge - Study trips, seminars - Office landscape results in subliminal learning effects -Employees seek each other out for knowledge	- Interactive and collaborative organization - Physical efforts made to improve interaction - Open architecture and office landscape - Provision of freedom from management - Collaboration with customers and R&D partners	- Firm philosophy: learning and knowledge generation → innovation - 80 % of products less than 5 years old - Increased efficiency in projects - Speed of Learning: Converting tacit knowledge into something utilizable

4.3.6 The Future of Plasto: Maneuvering Technological Advancement, Change and Globalization

The following and final section of this chapter revolves around the informants' thoughts on future challenges for Plasto in light of increased automation and speedier technological advancements, covered in the theoretical section as the 4th industrial revolution. The purpose of this section of the interviews was to get a closer insight at how the management of Plasto and their employees think about dealing with proposed challenges concerning knowledge sharing, being a research-based knowledge firm and the general outlook for Plasto in the future.

> We are confident that those who will win in the future are the ones who develop new knowledge and put it to use; or put to use knowledge that others have developed (Stenerud, 2016).

When discussing why there is increasing importance of investing in research and why knowledge generating is critical for Plasto, Stenerud was clear in his opinion that the reasoning behind it lies in the impact that global events have on local economies has changed and that changes in economies occur much more rapidly. *Looking back one generation, when our father ran the company, changes on the other side of the planet did not have an effect on a smaller company in Norway in the same manner and speed as it does today* (Stenerud, 2016). He continued by giving an example of a negative change in the oil price at the end of 2014, shut down all production over night of products intended for seismic sector. *We had finalized negotiations concerning a 50 percent increase in production capacity for products within seismic [oil sector], but 14 days later, the orders were nullified* (Stenerud, 2016). He seemed incisive on the fact that because the state of economies and markets change much more swiftly, on an increasingly global scale, knowledge is key for competitive edge. Furthermore, he suggested that if the knowledge is research-based, the company is solidly grounded at least from a theoretical basis. Indeed, Roger Grande talked about Plasto already having taken big steps in order to arm themselves in terms of being adaptive and possessing willingness to change according to market shifts and technological developments. There seemed to be a general agreement among the informants that without automation, Plasto would not be competitive. Automation provides the company with stability in terms of employment and makes them less vulnerable fluctuations in the economy. Furthermore, there will be more demand for specialists in the workforce, as Grande noted; *in the past, you had 20 people working manually towards manufacturing and production; today we are nearly entirely comprised of specialized workers, where robots perform the manual elements of production* (Grande, 2016).

Øyvind Bjorli was under the impression that the management was strategically concerned with Plasto being a frontrunner in technology and knowledge. Having worked at Plasto for nearly 20 years and throughout the generational takeover in 2005, Bjorli was under the impression that this mindset has always been critical for Plasto´s existence. He noted that,

> When we develop new technologies and products, after five years someone else who has a less costly R&D department might come and produce these very same products and technologies. It is then that we must be innovative in our developments in order to stay ahead. Our strategy is to be the frontrunner of knowledge (Bjorli, 2016).

This holds true when we consider the fact 80 percent of their products are less than 5 years in the making. Bjorli was clear that financial frameworks and conditions would always dictate the degree to which they can keep upgrading themselves in terms of competence and technology. *The only real challenge is prioritizing resources* (Bjorli, 2016), Bjorli said about possible future barriers to new knowledge and technology.

Ole Vidar Lyngstad pointed out that Plasto´s main success factor was a combined package of know-how and production capacity. Plasto does not have a marketing department, they are not itinerant sellers, nor do they have their own products. Plasto´s strategic niche is their research arena. It is through research and development that Plasto has a "commercial stage", so to speak. That is why, according to Lyngstad, research is imperative for Plasto to succeed. In terms of how Plasto can effectively change and adapt to technological development and increasing globalized pace of the manufacturing industry, Lyngstad noted that it is Plasto´s strategy to switch production towards fully automated operation. Plasto is still dependent on having employees on stand by during weekends and nights, as they keep automated production on full run 24/7. This is not manual labor; the employees are on standby monitoring the status of production through smartphones. From a business-, financial and socioeconomic perspective, it is a goal of Plasto to unhinge them from being employee-dependent, as this would save money and relieve employees from having to work nightshifts and weekend shifts. This can only be achieved through full-automated production, i.e. substituting manual labor for robotization of production, according to Lyngstad. A last important ponder was made by Lyngstad, where he spoke of the danger of the daily business being affected by employees being too preoccupied with research and development projects. *In an ideal world, the whole organization would participate in all activities and meetings, but that does not work in practice* (Lyngstad, 2016).

Nobody can predict what the future holds, and Lars Stenerud insisted that *there are surely a variety of specific challenges ahead, but the general state of things will require us to keep upgrading in terms of knowledge and technology* (Stenerud, 2016) Stenerud made it clear that there will be some bumps on the road already in 2016 and 2017. He further reflected upon the welfare society of Norway, and that keeping the current system running is the responsibility of all firms, research institutions and government to be efficient to maintain and develop the welfare system and national economy. As a final note, Stenerud claimed that, *we need a*

national, stable economy to keep welfare at a good standard, and I think the "knowledge push" will accelerate in that regard (Stenerud, 2016).

5 An Analytical Discussion

The thesis has thus far presented the theoretical overview and I have developed a framework of Knowledge Centric Management in chapter two. Methodological design and approaches followed in chapter three. Chapter four presented the case of Plasto and provided a detailed presentation of the empirical data collected from the firm. The following chapter will elaborate on the case study in light of the research question posed, thesis propositions stated and the theoretical framework of Knowledge Centric Management. This thesis sought out to argue for the proposed framework as an appropriate, strategical effort for firms to compete in the knowledge economy. In order to strategically test this, the theoretical framework for Knowledge Centric Management was constructed on the basis of the theories presented in chapter two. Through the presentation of theory and the framework of Knowledge Centric Management in chapter three, I intended to provide a theoretical argument that emphasized knowledge as an integral ingredient to contemporary leadership and management of organizations. The following chapter will stand as an analytical discussion of the proposed framework´s applicability and relevance in practice, in light of the empirical data and theories presented.

5.1 Recap: Research Question and Thesis Propositions

The research question posed was: *To what extents can knowledge-centric approaches to management enhance organizational learning, and how does organizational learning strengthen a firm´s innovativeness and competitive advantage?*

With regards to the first element of the research question concerning knowledge-centric approaches and its influence on organizational learning, chapter two uncovered theoretical perspectives of the 4th industrial revolution, Industry 4.0, where digital and technological change will disrupt and change industries and work routines. Because of the proposed ongoing industrial revolution, with major technological advances, automation of production and manufacturing on a global scale, it is argued that there is a need for fundamental shifts in skills and processes in organizations. Organizations´ knowledge bases, i.e., the knowledge they possess, new knowledge they attain and how they re-use knowledge are essential to the survival of the organization and its competitive force. The following chapter will explore

these issues with regards to the case study and seeks to provide answers to how Knowledge Centric Management enhances learning in organizations.

With regards to the second element of the research question concerning organizational learning and innovation, chapter two explored the concept of the learning organization and its increasing relevance to twenty-first century management due to the pressing complexity, uncertainty and rapidity of change in modern economies. Previous studies have found that knowledge management contributes to innovative performance, and this is thought to be true especially for industrial manufacturing firms. Finding connections between knowledge management, organizational learning and innovative performance was the main purpose of the second part of the research problem.

The following propositions were stated to provide scope to the study and the research question:

1. Soft power management and leaders with exceptional relational skills enhances learning effectiveness and builds genuine relationships between colleagues which enhances collective creativity
2. Architecture facilitates interaction and learning in the organization
3. If the knowledge-centric manager grasps the concept of spatial networks, tapping into knowledge sources locally and globally, the organization will sustain flows of knowledge.
4. Efficient implementation and use of knowledge increases the organizations innovative capability.

As mentioned in the section 1.2, the two central themes in the research question are interconnected. Whereas the first aspect revolves how knowledge-centric approaches enhance organizational learning, the second aspect asks how organizational learning strengthens a firm´s innovativeness and competitive advantage. The thesis has therefore first set out to explore how management can facilitate for learning to occur within its organization, and then sought to explore how this might affect their innovative ability. The following discussion is dedicated to answering these questions in light of the theory presented, the Knowledge Centric Management framework constructed and empirical evidence collected.

5.2 Part 1: Management at Plasto – The ´soft´ and the ´hard´ leadership

This section on the management at Plasto, evaluates the degree to which Plasto is managed according to knowledge management ideas and will explore potential weaknesses. One of the first important matters covered in this thesis is found in section 1.3, where it was proclaimed that knowledge management is not carried out for the sake of individuals or knowledge generation itself. The argument was made that for firms and organizations, private or public, the main objective of the processes of knowledge management is to increase profits and/or, ideally, lead organizations to reaching their goals. It was further mentioned in the introduction to the Knowledge Centric Management framework in section 2.5 that knowledge management is largely about human and organizational behavior. It was claimed to have relational and pedagogical elements to it, which underline a way of thinking about firms that emphasizes continuous treatment of knowledge externally and internally for enhanced innovation capabilities. As such, the first component of the Knowledge Centric Management framework, Soft Power Management, will be analyzed in light of the empirical findings.

Initially it may seem contradictory that on the one hand knowledge management is not carried out for the sake of individuals, whilst on the other hand knowledge management is concerned with human behavior and relational-pedagogical elements. It is important to always be wary that knowledge management is not an isolated phenomenon, rather, it must be seen as the most important cornerstone of our knowledge economy; furthermore, it is proposed that it provides sustained entrepreneurship, intellectual challenges, good management and innovation (Heghe, 2011). Knowledge management is also not a specific activity, action or some wholesome exertion that CEOs and managers find in a handbook to be used as checklist or step-by-step mechanism for organizational performance enhancement. Indeed it's a dynamic, changing and uncongealed process. Knowledge management pinpoints the essential ingredients of successful knowledge management, namely the ability to absorb information, share knowledge and re-use it in different context.

The purpose of the first thematic category in the interview guide, Managing and Leading Plasto, was to expose what categorizes Plasto as an organization, what type of leadership characterizes the management and the values that are held important within the firm. Overall Plasto fit the descriptions of a flat-structured, non-hierarchical manufacturing company. The management group of Plasto, spearheaded by Lars Stenerud, have strategically strived for

shaping the organization categorized as an open and inclusive approach to managing, aspiring to mutual trust, respect and liberty at work. This resonates key elements of the so-called ´learning organization´, which was depicted in section 2.5.2 (see also Figure 5) in which one contribution listed the following strategic elements to be denominators for the learning organization; mission and vision, leadership, experimentation, transfer of knowledge, and finally teamwork and cooperation (Goh, 1998). I argued under the first component of the framework, ´Soft Power Management´, that for purposeful execution of soft power management to take place, actors of management must excel in relational competency. Remember that a soft powered managerial approach is as much about a cultural ideal for the learning organization, as it is about the manager´s capacity for emotional and relational intelligence. The essence of this trait is that the manager consistently turns focus towards benefiting others, rather than to the benefit of him- or herself. Specifically, relational competence was defined as *skills, abilities, knowledge and attitudes that establish, develop, maintains and repairs relations between people* (Spurkeland, 2012, p. 17). The employee informants of Plasto seemed to align to the thoughts of having liberty at work and mutual trust, expressing that they enjoy a degree of freedom at work, being largely self-operable in everyday proceedings. There was consensus among the employee informants that the management imposed an open and inclusive leadership practice, one that allowed them to be self-operable and trusted to conduct work on their own account. More importantly, there was a strong indication that the leadership style and personalities of the managers made them highly approachable and accessible for the employees.

This testifies to the existence of a comfortable work environment in the organization, where employees feel free to approach authorities and engage in fruitful interplays. The management and managers of Plasto, and their professional relationships with the employees, resembles to some degree Rogers (1969) notion of client-centred therapy or *person-to-person relationships*. Recall that this implies that any notion of superiority and inferiority between the people and their superior are breached in this instance. Bureaucratic control is removed and ranks of authority seize to the minimal; instead flourishes the idea of the wise *developing* the less wise with appliance of mentoring and teaching. The managers take on the role of coaching, rather than ordering or dictating. Henceforth, we can establish that Plasto constitutes an environment of comfort, positivity and openness. Moreover, it establishes the fact that the relationships across the organization are generally built upon mutual trust and respect. It was argued that through this mutual understanding, all subjects within the

relationship would earn a sense of credibility, making them influential as a result. Consequently, from an organizational perspective, an employee will therefore be able to influence the manager, and the manager will be able to influence the worker. This is proven to be the case with Plasto, as it was generally expressed that the employees had little or no inhibition to approach the management, buffering opposing opinions nor challenging methods in proceedings. This is essentially what constitutes notion of bringing life back to work (Heelas, 2002) and it provides the organization the freedom to learn within their habitus, in a ´therapeutic´ manner (Costea, Crump, & Amiridis, 2008). Moreover, Lars Stenerud noted that one of the central aims of their management strategy is that decisions should be made at the lowest possible organizational level. This can be seen as a clear result of the philosophies of the company´s leaders, where they expressed belief in striking a balance between person-oriented and result-oriented leadership. Indeed, one of the pillars of the management philosophy at the firm remains that power is to be shared and decisions should be made at the lowest organizational rank whenever possible.

Having established that Plasto has successfully engraved a work environment of trust and comfort, in large part due to its management style and characteristics, there is henceforth a strong indication that the managers possess a high degree of relational competency. Indeed, I argued under Soft Power Management that building strong and genuine personal relationships between managers and colleagues generates a comfortable environment in which creativity may be unleashed. Furthermore, I argued that a knowledge-centric manager, by definition as a leader, does not see him or herself as indispensible or in a special position, but rather as a partner and co-worker in a bigger picture. Lars Stenerud made a strong declaration for such a mindset, when he likened himself to a general where important battles are carried out, you outlay a plan, but when that plan is to be executed, much of his job is done. This paints the picture of a leader who is confident in his employees, their abilities and expresses a strong dosage of trust in them executing a strategic plan or task. Indeed, Stenerud explicitly proclaimed that although he considered himself a leader with technological interest and orientation, he was very aware that it was the people of the organization that made the difference. This is in line of thought with the idea that rather than capitalism, socialism, salary surveys, data analysis, operating systems, annual financial reports and other business intelligence metrics, the most important challenge to overcome for businesses is making people look forward to coming to work in the morning (Semler, 1993).

In the theoretical chapter, it was claimed that to establish client-centred relationships you must present yourself as *who you are*. "Coming forth without armour, one learns much more – even from criticism and hostility" (Rogers, 1969, p. 228). Moreover, willingness to be vulnerable brings out more in others who are in a relationship with you, and it rewards greatly. If a manager or CEO ´comes forth without armour´, they show vulnerability. This in turn can be said to create a friendlier and more open interrelations between managers and employees. Adding to this, if managers show a genuine interest in their employees, the employees in turn will look upon the manager as one whom they can trust, one that will listen to their thoughts and respect any contribution they provide. This implies an extension of the relationship between the manager and his workers; they will establish a relation which constitutes more than just 'colleagues'.

Indeed, Stenerud noted that Plasto and the town of Åndalsnes are a small community, where everyone knows everyone. He further noted that they all know plenty of each other's personal backgrounds, families and individual lives. It is through this show of interest that the workers will feel appreciated and *seen*. It can be argued that as a result, they will commit themselves with heart and soul in provision of service; and they will not feel restricted creatively speaking. Production manager Roger Grande said one should have a friendly tone to ones employees, but they should also be aware of who is in charge. He said, *sometimes I can be very tough, but fair in my approach* (Grande, 2016). Elements of soft powered management and relational leadership do not of course eliminate tougher, more ruthless and ´hard´ approaches to managing firms. Indeed, a balance is needed for the management to be effective. As Grande noted, respect needs to be earned over time and cannot be enforced. In many ways, we can sum up soft power management as a balance between love and fear between a managers and his/her employee that ultimately ends in respectful relationships, as illustrated below in Figure 11. These are essentially carrot and stick mechanisms, the reference to offering reward and punishment to encourage behavior.

Figure 11: Soft Power Management Relational Maxim (Author´s own model)

Chief of Research, Ole Vidar Lyngstad, noted that there is no micromanagement occurring at Plasto and that the management is constantly present by sitting amongst all the employees. Indeed, whilst this presence is part of the backbone that makes the managers approachable and accessible all so easily, adversely this can be seen as Foucault´s notion of panopticism. Recall its testament that "one is totally seen, without ever being seen; in the central tower, one sees everything without ever being seen" (Foucault, 1977, p. 201). The classic Foucauldian approach to control can be considered indirect through open space, where workers do not *feel* as though they are being watched. A design of space that is panoptic thus becomes a highly efficient way of managing a mass of subjects. I argued further that it is a pastoral way of viewing management and discipline people, where the shepherd herds its livestock in the open field. The less visible form of power sets limits on what subordinates might do, and provides a kind of freedom of manoeuvre *within* boundaries. Keep in mind that this is in line with the employee informants' experiences of a free, self-operable work environment, however one can argue that it remains a sense of formal control. Recall Informant A´s assessment that *the management observe you, looking, without applying any stress*. As such, the employees are freed, but one could argue there is still an underlying sense of control.

This essentially constitutes to what Foucault phrased 'normalized punishment´ (Foucault, 1977). Foucault implied that the act of maintaining control with these mechanisms, and establishing norms of behaviour and activity at work, normalizes the procedure in the eyes of the subject. It does not violate the subject's body, but rather establishes guidelines for it to follow. As such, the establishment of these norms tailors the employee in a way that makes him/her more adaptable and easier to teach. This form of management ideology set a platform for a more authoritative and corrective power application on employees. One could even argue that it may limit possibilities of creative problem solving and generation of innovative ideas. Indeed, it was pondered upon in section 2.6 Challenges for Knowledge Centric Management, that knowledge management may best be understood as a rhetorical concept, rather than an articulate, commonsensical and directive management concept. In this sense, knowledge management is an Aristotelian concept that appeals to pathos (emotional response). In management theory, such an appeal could relate to the concept of ´normative control´, which is the attempt to elicit and direct the required efforts of members by controlling the underlying experience, thoughts, and feeling that guide their actions (Kunda, 1992). An underlying concern of this form of ´normative´ or ´emotional´ management, is perhaps illustrated most appropriately by Whyte (1956) when he wrote that

> "The skills of human relations easily tempt a manager into the practice of tyranny subtler and more pervasive than that which he means to supplant. No one wants to the see the old authoritarian return, but at least it could be said of him that what he wanted primarily from you was your sweat; the new man wants your soul" (Whyte, 1956, p. 397).

The suggestion laid forth by Whyte is striking, because it suggests that the elements brought forth in this thesis such as soft capitalism, cultural turn to life in work and soft power management, to name a few, might have a hidden and adverse effect. These softer approaches to management, which intent is to bring freedom at work and lead individuals towards self-actualization, and which subsequently serves to bring forth a sense of euphoria to work life, may inadvertently "enslave" and control people with greater intensity than hard and authoritarian management. It is a Catch-22 situation, describing a difficult situation from which there is no escape because it involves mutually conflicting or dependent conditions (Heller, 1961). If the manager wants to unleash their employee´s and set them creatively free, it requires a less authoritative and power intensive approach. But an approach less authoritative, to which appeals more to relational aspects of management and affiliated relationships, empowers managers even more.

Still, in tune with Knowledge Centric Management framework´s first component, Soft Power Management, the idea is that in processes where firms seek out new opportunities for smarter work, strengthening their competitive edge and increasing value creation, the most important asset is their employee. Exercising soft powered leadership is about shaping others through appeal and showing genuine interest in people. It was theorized that the execution of soft power management specifically concerns the portrayal of sincerity, mutual respect and trust. The opinion of the employee informants seem to reconcile a picture of management where they are observed and challenged, but with added liberty and trust that the employees can deliver on their own account. This, as both Roger Grande and Informant A noted, differs from where they previous work experience, categorized by more authoratively and less effective management. The first proposition of this thesis was that *soft power management and leaders with exceptional relational skills builds genuine personal relationships between colleagues that enhances creativity.* Soft power management is present at Plasto, and I find that the representatives of management possess exceptional relational skills. In theory, this has been argued to enhance learning effectiveness and build genuine personal relationships between colleagues that enhance creativity. In practice, based on the empiricism of this study, it is

found that the organization is characterized by a great deal of transparency, strong relationships and effective learning benefits. This is seen as a strong indication that the leadership and management of Plasto spur innovative processes.

5.3 Part 2: The Ecology of Learning - Perceptions and Exchange of Knowledge

The second theme of the data presentation was Knowledge and Knowledge Management, and aimed to grasp the informant´s perceptions of knowledge and knowledge exchange. Whilst the previous topic uncovered the characteristics, values and leadership of the firm, this section establishes to which degree the firm relates to knowledge, the management and exchange of knowledge and finally the ´Ecology of Learning´. Is knowledge as a mechanism for organizational progress recognized within the firm? What are the management´s and the employees´ perception of knowledge? Is knowledge valued at Plasto? And is knowledge manageable? Moreover, the second component of the Knowledge Centric Management framework is the ´Ecology of Learning´, will be analyzed in light of the findings.

To analyze these matters, we begin with a recap of two integral definitions; firstly, I defined knowledgeable workers as *anyone who for a living works with developing or using knowledge*. Secondly, I defined knowledge management as *the coordination of activities performed by knowledgeable workers so to effectively capture, share and (re)-use information and knowledge.* Insofar as 51 percent of the labor force of Plasto as of 2016 is comprised of the administration, production technology and R&D, with the remaining 49 percent of employees focused on production, the firm is eligible for stating that *at least* more than 50 percent of the workforce is made up of *knowledgeable workers*, by definition. Furthermore, Plasto, in its connectedness with research, innovation, networking, high-end technology and automated technology (Plasto, 2015, p. 8), is a knowledge-intensive organization. Chapter two covered perceptions on knowledge and the management of it, where a stronghold of theorists generally recognized that knowledge is a central asset for organizations and competitive edge (Drucker, 1969; Hansen, Nohria, & Tierney, 1999; Nonaka, 1991; Basadur & Gelade, 2006; Heghe, 2011).

The representatives of management viewed the sharing of knowledge as a pre-condition to commercializing knowledge. In the eyes of the management informants, knowledge itself and the sharing of knowledge only had a value if it is commercialized. This echoes Dandeker´s

(1990) historical account that workers, who are in fact the possessors of knowledge, are non-accumulative and accustomed to work for subsistence. However, at Plasto workers are not seen simply as resources or materialistic stock in which the management reaps off, as Dandeker implicitly seem to account the worker. On the contrary, the management at Plasto actively seeks to develop the knowledge of their employees. The informants said this typically occurred in both traditional *and* less systematic processes. Examples of traditional processes were sending employees to non-mandatory seminars, training courses and conferences; in addition, Plasto have their own service- and development program where additional educational skills are acquirable for higher skilled workers. On the other hand, less systematic processes are exemplified in knowledge exchanges occurring in co-development stages with clients, every-day collaboration with colleagues and in gatherings with partnering firms and research institutes. Lars Stenerud and Ole Vidar Lyngstad both noted that knowledge sharing and knowledge exchange is generally seen as difficult matters to excel in. One theoretical perspective suggested that a firm generally has two strategic approaches to managing knowledge and the exchange of it; it can take on a *codification strategy* involving codifying and storing encoded knowledge in databases where it can be accessed and used easily by anyone in the company, or it can use a *personalization strategy*, knowledge which is embedded in the individuals who developed it and is shared mainly through direct person-to-person contact (Hansen, Nohria, & Tierney, 1999). Detailed in Figure 2, the strategies are interchangeable; opting for one does not necessarily exclude the other. However, as noted by Hansen et.al. (1999, p. 113), "companies that use knowledge effectively pursue one strategy predominantly and use the second strategy to support the first".

Chief of Research Lyngstad noted that knowledge bases, which is a tool of codification strategies, work in such a way that for each project that is finished, employees documents all solutions, changes and problems that have occurred along the way so that whilst working on new projects, people can search back in time to find solutions. Lyngstad noted that whilst the intentions of knowledge bases are good, it is difficult to incorporate a systematic process where engineers and other employees log what they have done. Lars Stenerud also added that they were still working on ways to codify knowledge in information-systems. Indeed, this remains one of the major critiques against knowledge management, namely its functionalism. The problem is that ´knowledge´ is not necessarily functional, useful and generally a good thing; "whether what is defined is knowledge really solves problems is frequently not self-evident" (Alvesson & Karreman, 2001, p. 999). Moreover, it was argued that knowledge

sometimes creates problems, through imprinting a norm of what things should be like and indicating a gap between current imperfections and the ideal (Alvesson & Karreman, 2001). Plasto is predominantly concentrating on a personalization strategy, with codification strategy as support. Within Plasto it seemed widely recognized among all the informants that knowledge and the exchange of knowledge are integral elements to the success of the company. The argument that knowledge –focus at organizations is problematic because norms of what the state of things should be creates a sense of imperfection is weak, because despite its ´wackiness´ or perceived lack of functionalism, it remains a concern for any organization who wishes to progress. It is argued that people do not cooperate for the sake of cooperating; they cooperate for substantive reasons, to achieve certain goals, and unless these are comprehended the little manipulations of management for morale, team spirits and such are fruitless (Whyte, 1956). Stenerud went as far as suggesting that concepts of sharing knowledge, experience and interacting in a meaningful way in terms of learning, lied in Plasto´s DNA. This bodes well according to what Heghe (2011) noted, that knowledge management is *not* about managing knowledge; it is about managing organizations from a different perspective. Stenerud seemed to have a clear vision that if people and the development of people come first, then the products and development of better products comes thereafter as a result of the former.

From the employees' point of view, knowledge exchanges were key to developing oneself both personally and professionally. As was noted by one informant, close collaboration with clients increased self-confidence and belief in oneself. Moreover, the collaboration with clients when developing new products was seen as a key source for generating new knowledge. In other words, the management of Plasto has achieved the notions of work being self-fulfilling and self-realized. It was argued in section 2.3.1 that future workforces are likely to find that their jobs and specializations are categorized by greater flexibility, independence and empowerment that will inevitably compensate for the loss of previous jobs due to automation. The employee informants noted that Plasto serve them the tools, knowledge, trust and personal freedom to conduct work. This echoes the thoughts of flexible work organizations that enable workers to combine their work, private lives and continuing professional development more effectively, promoting a better work-life balance (Hagermann, Wahlster, & Helbig, 2013, p. 5). Stenerud noted that the metaphor of an "open door mentality" at Plasto describes the value they place in knowledge sharing. By being open and sharing their knowledge between each other internally and with partners externally, more

knowledge is ultimately generated. Theory suggested that “knowledge teaches us what is possible, experience teaches us what is impossible; moreover, experience does not necessarily lead to more knowledge, rather it is the combination of knowledge and experience that turns a specialist into an expert” (Heghe, 2011, pp. 26-27). Stenerud made a strong proclamation that knowledge exchanges is to absorb new possibilities and knowledge, and translate this into Plasto´s own contexts and assignments, and thereafter produce solutions together. This is quintessential to Heghe´s description of combining knowledge and experience to turn into a specialist. Stenerud´s philosophy was that the sole purpose of investing in research and development was to generate new knowledge and business opportunities. It was further problematized in section 2.3.2 that advancement in technological development is taking place on a global scale, and it changes the dynamics of how firms produce and operate. It was mentioned that a critical factor to succeed in this highly technological economy resides in how we socially respond, adapt and construct to these changes. It was suggested that firms, governments and education institutes increase focus on knowledge, for the reason that what knowledge one possess and how one uses it is seen vital to survive in this particular climate (Østrem & Børringbro, 2016).

Perhaps the term Knowledge Management remains too scholarly a term or triggers association to a set discipline of management. Nonaka´s term “Knowledge Creation” is arguably a sharper distinction, because it involves tapping into the tacit and subjective insights, intuitions and hunches of individual employees and making those insights available for testing and use by the company as a whole (Nonaka, 1991). Knowledge management, understood as Nonaka´s creation and generation of knowledge, is henceforth a mindset that treats knowledge as an activity rather than an object. Knowledge management is intended to be a human vision, not a technological or mechanical vision. The employee informants generally agreed that the environment of Plasto allowed everyone to participate and/or contribute to projects that they themselves do not necessarily work on. In fact, it was claimed by one that this was essential for the success of the projects. It was generally said of Plasto that knowledge exchanges were a less formal and more natural procedure. Here it is worth noting that knowledge sharing is not necessarily the most important factor; it is the re-use of new knowledge that provides value. This testifies successful implementation of personalization strategy, specifically a knowledge management mechanism, as seen in Figure 2, where networks for linking people are developed so that tacit knowledge can be shared (Hansen, Nohria, & Tierney, 1999). Linking people, so to effectively spread tacit knowledge, is the

mission of the Ecology of Learning. I argued that learning is critical for an organizations ability to innovate and evolve. For learning to occur, the processes of the organizational environment need to be fully functional, interactive, and adaptive as an organizational *ecosystem*. I argued that humans do not have a ´natural´ habitat; we construct them ourselves and express therein who we are and what we represent. Therefore, an organizational ecosystem of learning can be constructed. Inspired by practices from Silicon Valley, Lars Stenerud took measures of altering the office structures of Plasto, stripping down the closed office spaces for a more open office landscape. As he pointed out, the aim of the facilitation of social and integrative landscape is that one subliminally hears things around the office and unknowingly participates.

The employees' experiences of the more open spaces were that it became easier to "eavesdrop" on each other during work and perhaps interfere in cases where one feels like one can contribute to certain things. Øyvind Bjorli explained how he participated in discussions with the various, respective project managers on how they work and vice-versa; they were included to provide comments, advice and discussions on various elements of the projects he worked on. This was a natural process. This is a direct effect caused by Stenerud´s initiative to open up the workspaces. By doing so, Stenerud noted that knowledge and information is shared and spread. This is what constitutes a culture of inquisitiveness (Lippman, 2010). It is an approach that Lippman (2010) argued is the transactional relationship between learners and their learning environment, and how the learning environment – social and physical – can contribute to the development of the learner. The evidence therefore seems to point to Plasto having constructed a form of Ecology of Learning. Recall that I argued for the ethos and logic of the ecology of learning to encompass the processes and interactions among participants of the environment. It concerns the influence of the spatial environment on the mind, intellect and the behavior of people within it. There are strong indicators that this is the case at Plasto. For a firm to establish ecology of learning, the organization relies on a strong absorptive capacity, defined as the ability to exploit external knowledge using prior related knowledge, which confers an ability to recognize the value of new information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990). This is found to be the case at Plasto, seen in their cultural characteristics of willingness to share with each other, encompassing an interactive and collaborative work environment, the management providing freedom for employees to explore solutions and their more open office space solution.

5.4 Part 3: The Spatiality of Innovation - Networked Knowledge

The topic Networked Knowledge aimed to expose whom Plasto typically absorb information and knowledge from, how they approached this, to what degree this gave value to the company in terms of production and development and uncover any potential barriers to networked knowledge exchange. This section will also provide insight to the Knowledge Centric Management framework´s third component, ´Spatial Networks´.

Section 2.4.1 explored how organizational learning relies on partnerships and collaborations between firms in a shared community. The motives for such cooperation were given as a set of strategies, where benefits include risk sharing, access to markets, technologies, complementary skills, shortened innovation cycles, and enhanced learning (Powell, 1996). Having justified the motives for why firms integrate themselves in webs of partnerships and collaborative networks, the third component of the Knowledge Centric Management framework was spatial networks. I argued that this is the concept of spatial proximities and how these impact human behavior in organizations. It was shown in Figure 6 how trade has dispersed over the years, seen in the increase of FDI from 5.2 percent (in 1982) to 25.3 percent (in 2006) of world GDP. This is a clear indication of capital moving increasingly across country borders. The consequence of this is that modern organizations are increasingly operating in complex, interlinked networks across the globe, which leads to higher degrees of interdependencies on a local and global scale. I argued furtherthat for the knowledge-centric manager, grasping the concept of spatial networking is important because it is deemed insufficient in the local-global economy to only concentrate on internal affairs and capabilities to maximize learning efficiency within the organization. The knowledge-centric manager must be adept at both facilitating casual interactions and knowledge spillovers internally in the organization, as well as learning through cooperation and partnerships with fellow businesses and research institutes.

In terms of internal resources, Lars Stenerud made it clear that they invest heavily in monetary terms and in time to attain new knowledge. This is seen in that 80 percent of Plasto´s products as of 2016 have been developed within the last 5 years and are categorized as “new”, which signifies a highly innovative company. Plasto has a clear strategy to research and develop new products and solutions in collaboration with clients. Through collaboration, knowledge is shared with clients, in a quid pro quo manner. With that, as Stenerud said,

comes knowledge production and generation. This entwinement of research and business is essentially what constitutes to local buzz (Bathelt, Malmberg, & Maskell, 2004), which was defined as the process of generating knowledge within a firm, or, likewise together with a closely situated firm [or partner]. It refers to the information and communication ecology created by "face-to-face contacts, co-presence and co-location of people and firms within the same industry and place or region" (Bathelt, Malmberg, & Maskell, 2004, p. 38). Here it is worth mentioning that buzz has two generic dimensions relating to the Knowledge Centric framework; there is local buzz *within* the firm, as explained through the notions of architectures and geographies of offices, but also in combination with *outside* the firm with partners who are co-present. The importance of participating and investing time and monetary resources in local buzzes is taken seriously at Plasto, notably as Roger Grande explained that even if what one attains of knowledge from participating in projects and collaboration with other institutions and partners, is not put to use immediately or in specific projects, one still is left with a renewed hub of knowledge. Grande claimed that such knowledge does not disappear, it is either documented or codified in knowledge bases or remains tacit in individuals, but it can in any circumstance turn useful later on in other projects. The problematization of lock-in effects, which was explained in section 2.5.3 to be the excessive density of knowledge creation, is solved by firms connecting themselves to so-called global pipelines, seen as connections of firms where potentialities, local interpretations and usage of knowledge resides elsewhere (Bathelt, Malmberg, & Maskell, 2004).

Plasto and Lars Stenerud went a long way suggesting that connectivity with external partners is highly important for Plasto. Stenerud illustrated this by comparing Plasto to being one island in a big sea. A critical success factor was then to seek new knowledge outside of the firm. He did acknowledge that Plasto could not screen the entire world for information, but he seemed compelled to the fact that the least they should do is seek help from others as much as they could. Plasto remains highly integrated in a web of connections to which information is absorbed, and these connections can be summarized in five nodes; specialized associations (e.g. NFA), research institutions (e.g. NTNU, SINTEF etc.), research partnerships (e.g. SFI Manufacturing), clients and raw-material suppliers. We see then that Plasto are connected to a specter of knowledge sources, ranging from academia to industry-specialists. This resonates the argument that to a much larger extent than before, we see organizations monitoring, comparing and imitating each other ´s solutions on a global scale. They are *reacting* to each other (Håkansson & Snehota, 1989). Actively engaging in networks is a deliberate strategy of

Plasto, and it was said that without this, they would not be as successful. Indeed, a key concern for management was the speed of learning, i.e. the ability to utilize knowledge faster than ones competitors. As Stenerud said, most of the people in this world do not work for Plasto; therefore they are relying on monitoring movements and developments across the world that Plasto finds themselves in. This coincides with Powell´s (1996, p. 51) firm motives for cooperative competition; risk sharing; access to markets; technologies; complementary skills; shortened innovation cycles; and enhanced learning. Networking assists Plasto in monitoring market developments, attaining new information and generating knowledge. From the management´s perspective, there was a strong awareness that as a smaller company, seeking new knowledge in networks is a key factor for success. The reason Plasto views this as an important criteria to success is because if a firm manages to integrate itself in a business community, through one or several of the strategies Powell elaborates on, with trustful relationships, it can arguable reap great benefits of learning and innovation. In fact, the informants admitted that there were great benefits in working closely with clients and research institutional partners. Valuable connections and close collaboration not only increased the quality of products, but also increased the knowledge base of the firm, which was said to have a positive effect of future projects.

There were, however, a few barriers relating to knowledge absorption in networks according to the informants. One example given was that certain research projects are externalized outside of Plasto, meaning that the knowledge produced here is kept outside the company. Ole Vidar Lyngstad pointed out that there is potential for improvement for flow of knowledge between a research project and normative organizational projects. Indeed, this is a reflection which resonates concerns mentioned in section 2.4.1, where it was argued that the challenge of these collaborative partnerships is that as the involvement of a firm in a web of relations increases, calculating strategies and interests become much more complex, ultimately leading to the question of whether or not it is possible to be simultaneously strategic and cooperative. Plasto could improve on knowledge flow between research projects conducted internally and research conducted externally, e.g. at NTNU, SINTEF and more. One manner in which the flow of knowledge into the company can improve, is through Powell´s Strategic Alliance, which are formed to share information and produce innovation, however they differ from R&D networks in their level of intensity; strategic alliances seldom transfer information of the same depth or a proprietary as R&D collaborations (Powell, 1996). Plasto has an ongoing alliance and active participant role with SFI Manufacturing, a cross-multidisciplinary research

project with thirteen manufacturing companies, three NTNU faculties and three SINTEF institutes. The projects main goals are three-folded; 1) Build on existing capabilities and strengthen the Norwegian manufacturing companies ability to innovate; 2) Mirror the inherent cross-disciplinary innovation systems in the industry; and 3) Unleash innovation potentials and research challenges embedded in the cross-disciplinary interfaces (Gulbrandsen-Dahl, 2015).

SFI Manufacturing is a practical example of Strategic Alliance, however it remains to be seen to which extent this improves knowledge transfer into the firm and generates innovation at Plasto. A possible barrier to the innovative capacity of Plasto may also lie in the fact that Plasto might become trapped in a tension between focusing on supplying clients versus focusing on R&D partnerships. Plasto can be said to be a captive supplier, who in networks are "transactionally dependent on much larger buyers. Suppliers face significant switching costs and are, therefore, 'captive'" (Gereffi, Humphrey, & Surgeon, 2005, p. 84). If Plasto is indeed in a captive relation to their clients, it may be argued that they at times remain too preoccupied with responding to their customer´s needs and thereby overlook the more radical product changes and development that often take place in R&D environments. As a result of their ´captivity´, their innovative capability may be disarmed to some extent. Indeed, Lars Stenerud claimed that Plasto longs for developing an own company product line. Directing more focus on R&D and research partnerships may strengthen Plasto´s innovative ability in the future. Overall, Plasto are closely tied to national and international research networks that provide fruitful business possibilities. Their strong relations to industrial partners are essential to valuable crossover innovations. The third component of the Knowledge Centric Management framework, ´Spatial Networks´, is strongly present at Plasto. Residing in the local town of Åndalsnes, it is deemed essential for Plasto and their innovative capacity to connect themselves to local and global networks. This is in essence what can be referred to as the spatiality of innovation; it is innovation that is spurred by strong connectivity in networks that leads to sources of new knowledge.

5.5 Part 4: Fertilizing Knowledge: Collective Learning and Innovation

The following section on Fertilizing Knowledge: Collective Learning and Innovation, builds on the data presented in section 4.3.5 on Learning at Plasto. The section sought to discover in what way the management facilitates for learning to occur, to what degree employees reaped

learning benefits during work, and what impact learning has had on the company´s innovative ability. Moreover, the fourth component of the Knowledge Centric Management framework, ´Fertilizing Knowledge´, will be analyzed in light of the findings made.

The theoretical chapter on organizational learning began by addressing two main concepts: learning systems in organizations and trust in industrial networks. With regards to learning, theories point to the concept of the learning organization is increasingly relevant to modern management because of the increased complexity, uncertainty and rapidity of change in organizational environment (Malhotra, 1996). This assertion seemed to be aligned with Plasto, where Lars Stenerud noted early on that Plasto is highly concerned with learning as an organization. The extent of its importance lies where Stenerud explicitly pointed to the *speed of learning*, which he saw as the ability to utilize knowledge faster than others, and which he reckoned would be a central issue in the future of innovation. This is an extension of the thoughts set forth by Heelas and soft capitalism, which is said to consist of the self and the self-culture where the self as a self considers itself to be something more, something 'deeper', more natural and authentic; the self as a self which has to work on itself to enrich and explore itself (Heelas, 2002). Stenerud´s ´speed of learning´ and Heelas´ notion of self-enrichment are companioned in the sense that to learn and innovate, one needs the freedom to explore and a culture where individuals are allowed to go about their business as they please. The employee informants largely recognized Plasto as an interactive and sharing organization. The management of Plasto spoke of strategic actions that have been made to turn Plasto into an integrative, sociable and learning work place, including; physical efforts to improve interaction, opening office landscape and the provision of freedom to work. I have categorized three strategical elements, *cultural, managerial* and *physical,* that signify Plasto and their fertilization of knowledge, which will be elaborated on below.

Culturally, there seemed to be a great sense of transparency intact at Plasto, illustrated by Øyvind Bjorli´s experience that one is not uncomfortable as an employee to question the ways things are run. This is accepted and even endorsed by management, seeing as Stenerud pointed out, the board pinpoints the goals and ambitions of the company, and have complete faith that the leader group has the information and competence to navigate thereafter. This, Stenerud added, transcends from the management, to the middle managers, to the end resource. Furthermore, Stenerud believed the work place becomes much more interesting for the people working within it, if the chain of command is more spread and real contribution is

felt across the entire organizational chart. Bjorli noted that he might disagree with management on a particular solution, and often what happens is that through open dialogue and critical discussions they work their way towards an even better solution than what was originally in place. What Plasto has achieved, according to the testaments of Bjorli, is Morgan´s notion of single-loop learning, i.e. the ability to detect and correct error in relation to a given set of norms; but more importantly, double-loop learning, the ability to take a double-look at the situation by questioning the relevance of operating norms (Morgan, 1998, p. 80). Plasto demonstrated concrete examples of Morgan´s organizational brain, illustrated by example in that employees' continuously question the running of things.

Managerially, the leaders seem very open, transparent and approachable. Although critical discussions and dialogues occur in all organizations, the fruitfulness of this lies in the managers´ willingness to *listen* and the employees´ willingness to *challenge*. I argued that fertilizing knowledge involves the knowledge-centric manager successfully unlocking potentials of pooled, complementary resources. In order to do this, he or she must take relational initiative. Relational initiative is here seen as a fundamental attitude towards initiating contact between and across departments in the organization and with external partners who are complementary and developmental (Spurkeland, 2012). The employee informants noted that they could freely interrupt and jump into conversations and projects. This is a clear indication that they as a unit encompass the capacity for thinking new. Innovation processes are not linear; rather, they are continuous and non-linear processes. Furthermore, the strongest indicator for Plasto´s innovative capacity is the fact that 80 percent of their products are developed in the last five years. This stands as the single-most important testament to the philosophy of the management at Plasto; namely that learning and knowledge generation enhances innovative ability. Plasto illustrates the importance of managers being relationally skilled. As the employee informants expressed, they were very glued together, exemplified by Ole Martin Sørli´s quote: *there is no use for me saying this is what we should do; a lot of collaboration and coordination is needed to develop ourselves and improve* (Sørli, 2016). This is also the purpose of fertilizing knowledge, namely engaging in people, and entwining those with complementary skillsets, which was argued to have great impact on increasing the value of knowledge. The competitive sharpness of today´s economy leaves organizations vulnerable. Developing employees are key to change and embracing environmental change as a norm, detecting early warning signs that give clues to shifting trends and patterns of the environment. This requires not just cognitive skills from the

manager, but also emotional, intuitive and tactfulness. It requires the learning organization to become skilled in breaking boundaries separating it from its environment to engage and experience the environment as fully as possible (Morgan, 1998). Morgan suggested that "organizations must develop cultures that support change and risk taking; promoting an openness that encourages dialogue and expression, recognizing that since genuine learning is usually action based, organizations must find ways of helping to create experiments and probes so that they *learn through doing* in a productive way" (Morgan, 1998, p. 85).

Physical efforts have also been made for Plasto to uphold collaboration and knowledge sharing, as elaborated on in section 5.3 on the Ecology of Learning. Underlying the word learning when thinking about organizations is that we view it as both individual and collective learning. This finds its root in that whilst learning must occur in individuals of an organization, for individual developmental and creative purposes, learning also has to be collective for the organization to be a unity of knowledge generation and information processing. As a consequence of tailoring the office landscape of Plasto, the employees recognized that due to much co-work, close interaction and easy access to each other, there were good learning effects from working at Plasto. For the ´newer´ employees, the learning curve had been steep; for the older employees, the impression was that once Plasto shifted away from the formalized, collaborative ways of working, and moved towards a more informal, collaborative approach, efficiency in problem solving and project deliveries was improved. These, among other things, have according to the employees improved efficiency in projects.

I theorized the concept of *fertilizing knowledge,* which was given to be *reaping what you sow; and, what you sow is continuously working on the inputs in order to create innovative, new output.* Fertilizing knowledge encompasses the entire sphere and framework of Knowledge Centric Management and is a metaphor intended to serve as a matter of perception on organizational management. It involves getting employees at every level of an organization contributing creatively in developing, manufacturing and creating new products. In doing so, the knowledge-centric manager tries to make the employees see the value of what they are doing. It is a continuous and exhaustive process, which bears no particular end to it. The main goal is always to maintain a strong sense of unity and collaborative creation in the organization. It sought to serve what Morgan (1998) called metaphors that lead us to understand situations in powerful yet partial ways. Morgan (1998) proposed the metaphor of

the organizational brain. Fertilizing knowledge is more a state of mind or philosophy of the organizational brain. Recall that metaphors do not have to mean grammatical structures or rhetorical expressions. A metaphor can also be a matter of perception, something for individuals with their different backgrounds and experiences to understand something intuitively. Remember also that rhetoric has already been emphasized in this thesis as an important factor for understanding and implementing knowledge management (see section 2.6 and 5.2), which outlined attempts to elicit and direct the required efforts of members by controlling the underlying experience, thoughts, and feeling that guide their actions (Kunda, 1992). The empiricism and findings suggest that the management of Plasto has accomplished aspects relating to the concepts of the organizational brain and fertilizing knowledge. There was awareness among the employee informants that

> We all know something about a lot, but in terms of details of for example how a plastic part should be, the toolmaker is a specialist so I seek him out for specific advice. We always pull in those in the company who are experts in their fields when working on different things (Bjorli, 2016).

This testifies a clear willingness to learn and participate. I theorized of fertilizing knowledge that the main purpose of it was to gather the employees, like the shepherd gathers his herd, and make the employees see interactive and collaborative work as something to which they *contribute* to rather than something they are *obliged* to do. It involves getting employees at every level of an organization contributing creatively in developing, manufacturing and creating new products. In this way, Plasto becomes highly adept at generating and utilizing each other's knowledge. It also testifies the fourth component of the framework presented, Fertilizing Knowledge, in that Plasto seizes value of knowledge; through communities of practice, highly integrated employees and office environments, utilizing complementary skills existing within the firm. A strong testament of this lays in the fact that the majority of their products are less than five years old.

5.6 Part 5: Future of Plasto in the Knowledge Economy

The fifth and final theme of the empirical findings, focused on the informants' thoughts on future challenges for Plasto in light of increased automation and speedier technological advancements and the 4th industrial revolution. The aim was to uncover how Plasto deals with proposed challenges concerning knowledge sharing, being a research-based knowledge firm and the general outlook for Plasto in the future.

Section 2.3.1 covered elements of the 4th industrial revolution, Industry 4.0, technological disruption and change in business. Keynes (1930) proposed that economies would rapidly experience technological unemployment, seen as the instance where an economy experiences increased unemployment due to our discovery of means of encompassing the use of labor outrunning the pace at which we can find new uses for labor. Closing in on a century after Keynes´ proposition, many argue that we are on the verge of a 4th industrial revolution where automation, data exchange and manufacturing technologies will change transform industrialization into being "smart" (Bloem, J. et.al., 2014). Firms and workers of the 4th industrial revolution will be forced to change and adapt once more to sufficiently encompass the technological developments. At Plasto, firstly, there was a strong awareness from management that global economic events can have major impact on local economies. A general consensus among the informants was that coping with this seemed to be focused on developing new knowledge and putting it in use; or putting in use knowledge that others have developed. It was argued in section 2.3.1 that contrary to common perception, technology itself is rarely the source of major new business disruptions. It is organizations ability to combine changing technology with new business models that enables them to outperform rivals. Roger Grande was of the opinion that Plasto had already taken big steps in order to arm themselves in terms of being adaptive and possessing willingness to change according to market shifts and technological developments. Automation provides the company with stability in terms of employment and makes them less vulnerable fluctuations in the economy. In essence then, the only real challenge then is prioritizing resources, as one employee noted. It was suggested in the theoretical chapter that that future workforces are likely to find that their jobs and specializations are categorized by greater flexibility, independence and empowerment that will inevitably compensate for the loss of previous jobs due to automation. In view of the impending shortage of skilled workers, this will allow older workers to extend their working lives and remain productive for longer. Flexible work organizations will enable workers to combine their work, private lives and continuing professional development more effectively, promoting a better work-life balance (Hagermann, Wahlster, & Helbig, 2013, p. 5).

As such, Plasto´s main success factor seems to be a combined package of know-how, willingness and ability to adapt and their strong production capacity. Moreover, they have a niche in their research arena and heavy investments in R&D. This has strategic intent, in that

if the firm´s knowledge is research-based, the company remains solidly grounded at least on a theoretical basis. The importance of research-based knowledge for firms may be highlighted by the need to radically reconsider the way one operates firms. With Industry 4.0 encompassing trends such as digitalization, robotization, artificial intelligence, the Internet of Things and cloud systems, new means of communicating along the value chains arise and firms are increasingly pressured to adapt to customers changing needs. This seemed to be generally agreed upon among the informants, where consensus laid in that without automation, Plasto would not be competitive. Generally, Plasto encompass a culture for innovation and the ability to push boundaries. Strong indications of this lay in their constant search for new dimensions in products, improvement of products and development of new products. This is a result of their mindset and philosophy that research and the knowledge generated from research *must* be industrialized. Lars Stenerud insisted that *there are surely a variety of specific challenges ahead, but the general state of things will require us to keep upgrading in terms of knowledge and technology* (Stenerud, 2016). Plasto are experts in utilizing networks, valuing knowledge and its commercial value and finally extracting value from resources of their employees. Their mentality can be summed up in that there is no alternative to innovation.

Recent news wrote of the combination of technology and knowledge in Norwegian companies and milieus, securing the movement of production from abroad, back into Norway (Stensvold, 2016). From a macroeconomic perspective, this has the potential to have positive effects on the national economy of Norway. Plasto, spear-headed by Lars Stenerud, remains devoted to this as Stenerud reflected upon the welfare society of Norway. Stenerud opinioned that keeping the current system running is the responsibility of all firms, research institutions and government to be efficient to maintain and develop the welfare system and national economy. As a final note, Stenerud said: *We need a national, stable economy to keep welfare at a good standard, and I think the "knowledge push" will accelerate in that regard* (Stenerud, 2016).

6 Conclusion

This thesis was divided into six chapters: Introduction, Theoretical Overview and Model Framework, Methodology, the Case Study, an Analytical Discussion, and finally, Conclusion. Chapter two was dedicated to theoretical perspectives on organizational learning and leadership, in relation to innovation, the 4th industrial revolution and the new knowledge economy. In addition, I introduced a framework for Knowledge Centric Management and its four dimensions. In chapter three I presented the research design and methods used to collect data. In chapter four I presented the data and empirical findings, which were divided into sub-categories, in accordance to the thematic breakdown of the interviews as they were originally conducted. In chapter five I provided an analytical discussion of the data presented in chapter four. It was divided into categories reflecting the themes of the theoretical overview and modelization of Knowledge Centric Management in chapter two. The following chapter provides a summary of the findings relating to the theoretical perspectives, in addition to comparing the findings to the stated thesis proposition. Table 6 is a demonstration of the thesis propositions and its findings. The research question will be answered in addition to relating the findings and analysis made to the framework provided in Figure 7, and the consequent conceptions of the framework, which is established in Figure 12. Lastly, implications of the study and suggestions for further study will be provided at the end.

6.1 Summary of Findings

The first component of the framework, *Soft Power Management*, was evaluated through studying the degree to which Plasto is managed according to knowledge management ideas and uncovered potential weaknesses. In general, Plasto is a flat-structured, non-hierarchical manufacturing company. The management group of Plasto, headed by Managing Director Lars Stenerud, clearly portrays a leadership philosophy with an open and inclusive approach to management, aspiring to mutual trust, respect and liberty at work. This is seen to resonate the idea of the learning organization as described by several contributors (Goh, 1998; Malhotra, 1996; Morgan, 1998; Powell, 1996; Duffy, 1997). The employees of Plasto seemed aligned with this description, expressing that they enjoy a large degree of freedom at work, being highly self-operable in everyday conducts of labor. This may be a result of the firm's leadership philosophy, balancing between person-oriented and result-oriented leadership. Indeed, one of the pillars in this philosophy at the firm is to share power and make decisions

at the lowest possible organizational rank. The empirical analysis indicates that the Plasto leadership possesses the traits of soft power management and relationally competency. Furthermore, the management of Plasto, spear-headed by Managing Director Lars Stenerud, fit Spurkeland´s definition of relationally competent leaders (2012, p. 17): *skills, abilities, knowledge and attitudes that establish, develop, maintains and repairs relations between people.* Although the management showed clear interest in technology and being result-oriented, they demonstrate exceptionally strong awareness in their employees and making them better as competent human resources. Moreover, the employees seemed to agree to this testament. The first proposition of this thesis was that *soft power management and leaders with exceptional relational skills will enhance learning effectiveness and build genuine personal relationships between colleagues that enhance creativity*. This can be argued to hold truth based on the findings made.

The second component was *The Ecology of Learning*, and was evaluated by gaining perspective as to the informants´ perceptions of knowledge and knowledge exchange. Moreover, it would establish to which degree the firm views knowledge and the management and exchange of knowledge as important to innovation; and finally whether the firm resonates the proposed descriptions of the ´Ecology of Learning´. I defined ´knowledge´ as *knowledge is information about the world that is cognitively embedded and applied to solve problem*. I defined the management of this as to *administer internally and externally, explicit and tacit information and knowledge in a strategically and business oriented perspective.* Firstly, it seemed widely recognized among all the informants that knowledge and the exchange of knowledge are integral to the success of the company. Indeed, management viewed the sharing of knowledge as a pre-condition to commercializing knowledge. Moreover, knowledge was seen to only have business value once, and if, it is commercialized. Management claimed to actively and strategically develop the knowledge and competencies of their employees. The informants said this typically occurred in both traditional *and* less systematic processes. It is suggested that Plasto mainly focuses on a personalization strategy, seen in Hansen et.al (1999, p. 109) as the notion where "knowledge is closely tied to the person who developed it and is shared mainly through direct person-to-person contact".

Indeed, Stenerud seemed to have a clear vision that if tasks are performed in teams where knowledge can be shared, followed by personal development, innovation and product development may improve. From the employees´ point of view, knowledge exchanges were

key to developing oneself both personally and professionally. This resonated Gay´s (1996) notion of work no longer being seen as a painful obligation enforced on individuals, but as a vital means to self-fulfilment and self-realization; life in the entrepreneurial organization has a romantic quality. Moreover, the collaboration with clients when developing new products was seen as a key source for generating new knowledge. It was argued; a critical factor to succeed in a highly technological economy resides in how we socially respond, adapt and construct to these changes. The philosophy of Plasto´s leadership is that the ability to learn, in combination with investments in research and development, generates new knowledge and business opportunities.

I have argued that linking people, in order to effectively distribute the tacit knowledge residing in individuals with the firm, is the purpose of the Ecology of Learning. Continuous learning is critical for an organizations ability to innovate and evolve. For learning to occur, the processes of the organizational environment need to be fully functional, interactive, and adaptive as an organizational ecosystem. Plasto can be said to incorporate a learning ecosystem, in that Plasto has taken measures of altering the office structures of the firm, stripping down the closed office spaces for a more open office landscape. The aim of the facilitation of social and integrative landscape is that one subliminally hears things around the office and unknowingly participates. One experience of the more open spaces were that employees came to "eavesdrop" to other discussions during wok and in some cases interfered where one felt one could contribute. Plasto´s ecosystem encompasses willingness to share knowledge, in an interactive and collaborative work environment, facilitated by a management that promotes freedom for personal initiatives in relatively open office landscapes. Consequently, the second proposition was that *architecture facilitates interaction and learning in the organization.* Arguably, this is still valid, however it remains a smaller factor of learning at Plasto. Cultural and managerial factors are seems to be more important, based on the findings in this study.

Exploring the third component, *Spatial Networks*, I aimed to uncover from who Plasto typically absorb information and knowledge from and how they approached this, in order to measure if it gave added value the firm in terms of production and development. Furthermore, I sought to uncover any potential barriers to networked knowledge exchange. Spatial networks were articulated as the concept of spatial proximities and how these impact human behavior in organizations. In general, Plasto absorbs external information from five nodes;

specialized associations (e.g. NFA), research institutions (e.g. NTNU, SINTEF etc.), research partnerships (e.g. SFI Manufacturing), clients and raw-material suppliers. We saw then that Plasto are connected to a varied specter of knowledge sources, ranging from academia to industry-specialists. From management´s perspective, there was a strong awareness that as a smaller company, seeking new knowledge in networks is a key factor to success. For Plasto, actively engaging in networks is a deliberate strategy, and it was said that without this, they would not be as successful. Indeed, a key concern for management was the speed of learning, i.e. the ability to apply knowledge to new products and more efficient processes faster than ones competitors. Furthermore, networks assist Plasto in monitoring market developments, attaining new information and generating knowledge.

A key concern for Plasto was the speed of learning, i.e. the ability to utilize knowledge faster than ones competitors. Monitoring and cooperating in networks allow them the ability to attain and re-use knowledge at a faster pace. This is seen as integral for Plasto given their smaller size as a firm. Integrating themselves with trustful relationships in a larger community consisting of firms and research institutes, can arguable realize greater benefits of learning and innovation. The employee informants supported the greater benefits of working closely with clients. Valuable connections and close collaboration not only increased the quality of products, but also increased the knowledge base of the firm, which was said to have a positive effect on future projects.

Several barriers were, however, identified to knowledge absorption in networks. One example given was that certain research projects are externalized outside of Plasto, meaning that knowledge produced is kept outside the company. Another barrier identified was the lack of formal setting for sharing knowledge does not currently exist, which may impair the company´s ability to absorb enough knowledge. Furthermore, it was identified that Plasto could improve for knowledge flow between research projects conducted internally and research conducted externally, e.g. at NTNU, SINTEF and more. The fact that Plasto are allied in cooperative manufacturing agreements, in addition to participating in the SFI Manufacturing project, is seen as an important step to improve the flow of knowledge in and out of the firm. Formal settings for sharing knowledge still remains, however Plasto´s continuous interconnectedness with firms, research institutes and clients is here seen as a successful strategy to spatial networking. The third proposition of this thesis was that *if the knowledge-centric manager grasps the concept of spatial networks, tapping into knowledge*

sources locally and globally, the organization will sustain flows of knowledge. This is supported by the empirical findings made in this thesis.

The fourth component of Knowledge Centric Management was *Fertilizing Knowledge*, which sought to discover in what degree employees reaped learning benefits during work, in what way the management facilitates for learning to occur and what impact learning has had on the company´s innovative ability. The findings were divided into three success-factors in the analysis: cultural, managerial and physical. *Culturally*, there seemed to be a great sense of transparency intact at Plasto. The employees largely recognized Plasto as an interactive and sharing organization, in which they did not feel uncomfortable critically questioning the ways things are run. This is seen to testify that Plasto inhabits the notions of single-loop learning and, more importantly, double-loop learning, which was the ability to take a double-look at the situation by questioning the relevance of operating norms. *Managerially*, the leaders seem very open, transparent and approachable. Although critical discussions and dialogues occur in all organizations, the fruitfulness of this lies in the manager´s willingness to *listen* and the employee´s willingness to *challenge.* I argued that fertilizing knowledge involves the knowledge-centric manager successfully unlocking potentials of pooled, complementary skills and resources. In order to do this, he or she must take relational initiative. Relational initiative is here seen as a fundamental attitude towards initiating contact between and across departments in the organization and with external partners who are complementary and developmental.

The employee informants noted that they could freely interrupt and jump into conversations and projects. The time-length of which the respective employee informants have worked at Plasto varied from 1 to above 20 years. The employees recognized that due to much co-work, close interaction and easy access to each other, there were good learning effects from working at Plasto. For employees with shorter employment tenures, the learning curve had been steep; for the older employees, the impression was that once Plasto shifted away from the formalized, collaborative ways of working, and moved towards a more informal, collaborative approach, efficiency in problem solving and project deliveries was improved. *Physically*, the management of Plasto confessed that strategic actions have been made to turn Plasto into an integrative, sociable and learning work place, including; physical efforts to improve interaction, opening office landscape and the provision of freedom to work. These, among other things, have according to the employees improved efficiency in projects. Fertilizing

knowledge was theorized to involve getting employees at every level of an organization contributing creatively in developing, manufacturing and creating new products. In doing so, the knowledge-centric manager tries to make the employees see the value of what they are doing. As such, the fourth proposition was that *efficient implementation and use of knowledge increases the organizations innovative capability*. This is supported, seen in the cultural, managerial and physical characteristics of Plasto.

The fifth and final theme of the empirical findings, uncovered the management´s and employees´ thoughts on dealing with proposed challenges concerning knowledge sharing, being a research-based knowledge firm and the general outlook for Plasto in the future. There was a strong awareness from management of the major the impact local and global economic events have on local industries and firms. The general idea of coping with this seemed to be developing new knowledge and putting it in use; or putting in use knowledge that others have developed. Indeed, Plasto´s main success factor seems to be a combined package of know-how and production capacity; moreover, they have a niche in their research arena. This has strategic intent, as it was found that if the knowledge is research-based, a firm is solidly grounded at least from a theoretical basis. Lastly, there seemed to be a general agreement among the informants that without automation, Plasto would not be competitive. Automation provides the company with stability in terms of employment and makes them less vulnerable fluctuations in the economy. In essence then, the only real challenge then is prioritizing resources, as one employee noted.

Table 6 depicts the relationship between the propositions stated for this thesis and the results found in the empiricism presented in this chapter.

Table 6: Thesis Propositions contra Findings (Author´s own table)

	Propositions	*Results*
Relationships	Soft power management and leaders with exceptional relational skills enhance learning effectiveness and builds genuine relationships between colleagues which enhances collective creativity	Supported
	Architecture facilitates interaction and learning	Partially Supported – Cultural and managerial factors are deemed more influential
	If the knowledge-centric manager grasps the concept of spatial networks, tapping into knowledge sources locally and globally, the organization will sustain flows of knowledge	Supported
	Efficient implementation and use of knowledge increases organizations innovativeness	Supported

6.2 KCM: A framework for organizational change, learning and innovation

Throughout this thesis, I have argued that conceptually, the logic and rationalization of Knowledge Centric Management lies in the interoperability achieved of management ideology, knowledge creation, information sharing, organizational learning and quality of interaction between agents of organizations through notions of spatial networks. This entire synchronization process relies on dynamic organizational structure and aspires to promote better organizational structures for successful innovation. This was theorized and depicted in Figure 7 ahead of conducting the data collection at Plasto. Based on the previous chapters, I argue that Plasto largely coincides with the elements put forth in the theory and thesis propositions. This is a key finding in this work. Specifically, the thesis sought to investigate the following research question:

To what extents can knowledge-centric approaches to management enhance organizational learning, and how does organizational learning strengthen a firm´s innovativeness and competitive advantage?

With regards to the first part of the question, I have argued that a knowledge-centric manager, by definition as a leader, should not be seen as indispensible or in a special position; but rather as a partner and co-worker in a knowledge rich environment. A locus point of a knowledge-centric approach is therefore to facilitate for improved learning processes. To accomplish this, it was argued that the organization must encompass relationally equipped managers and architectural designed offices can assist for increased and dynamic interactions between co-workers to take place. The degree to which the managers at Plasto are relationally competent has not been fully tested in this thesis. Rather, through the telling of the employee informants, I sought to gain perspective on their relations to management. The general observation is that the conducts of management fits the ingredients laid forth in the concept of soft power management. This component was summed up in Figure 11 in that the combination of love and fear, or, carrot and stick mechanisms, in leadership approach leads to respect between management and their subordinates. That seems also to be the case in Plasto. Moreover, the organization is characterized by transparency, strong and seemingly genuine relationships between managers and employees. Fruitful learning benefits are the result of this. This coincides with Knowledge Centric Management framework´s first conjecture that soft power and relational leadership enhances learning and collective creativity in organizations.

In addition, I argued that architecture and spatial aspects of offices could influence learning in organizations. Physical efforts have been made at Plasto to open up offices, and management has therefore facilitated for employees to have easy access to each other. The intention was that employees would subliminally take interest to other activities and discussions, and inadvertently contribute to non-assigned projects. By doing so, Plasto wanted to stimulate information sharing. In the study, the employee informants confirmed that the efforts had facilitated a natural process where sharing and collaborating contributed to more innovative solutions. Although the altering of architecture have facilitated collaboration and learning at Plasto, I regard the cultural mindset of Plasto and the managerial characteristics more important to improve a learning environment than physical measures of office landscapes. This corresponds with Knowledge Centric Management framework´s second conjecture that a

functional interactive and adaptive organizational ecosystem, with architectural facilitation of interaction and co-work, enhances learning.

With regards to the second part of the question, I have argued that the key to better exploit knowledge and increase the learning abilities in organizations might lie in improving learning by increased inter-connection and closeness between people in the organization and through inter-firm relationships. Moreover, I have also discussed how organizational learning relies on partnerships and collaborations between firms in a shared community. One of Plasto´s most distinctive characteristics is their attachment and integration in a web of networked connections where they absorb information and knowledge. These connections are deliberately focused on five nodes; specialized associations (e.g. NFA), research institutions (e.g. NTNU, SINTEF), research partnerships (e.g. SFI Manufacturing), clients and raw-material suppliers. These networked relations contribute to in- and outflows of knowledge for the firm, which consequently leads to collective organizational learning. The informants admitted that there were great benefits in working closely with clients and research institutional partners. Valuable connections and close collaboration not only increased the quality of products, but also increased the knowledge base of the firm, which in turn was said to have a positive effect on future projects. The second area of the research question, focused on how organizational learning affects and strengthens innovative performance. The strongest indication of learning, and consequently, innovative performance, is that 80 percent of the products produced at Plasto are less than five years in the making. Another strong indication of the significance of learning and its impact on innovative performance is Plasto´s product portfolio, which is characterized as highly adaptable and changeable in response to shifting market demands. Plasto remains a highly active producer, engaging in R&D and reaping learning benefits from a range of networked sources. These are indications of a highly productive and innovative firm. As such, it seems reasonable to establish that organizational learning at Plasto has aided their innovative ability. This seems aligned with Knowledge Centric Management framework´s third conjecture that spatial networking, attaching the firm to local and global networks, is essential to organizational learning and innovation. Moreover, it also supports the framework´s fourth conjecture, which in Plasto´s case is the ability to *fertilize knowledge* through communities of practice, integrated employees and contribution of complementary skills.

Still, certain questions relating to the third component of Knowledge Centric Management framework, ´Spatial Networks´ remains. Firstly, there are doubts to whether Plasto are doing enough to absorb knowledge in their networks. Certain invested research projects are externalized, which means that knowledge produced during the development stage are not flowing back into the firm. Another concern is whether Plasto are balancing their strategic and cooperative efforts appropriately enough to maximize innovative capability. Collaborative partnerships involve a web of relations where calculating strategies and interests increasingly become more complex the more a firm collaborates. This can potentially be counterproductive. Too much collaboration can lead to Plasto down-stripping competitive advantages. There is still little doubt that Plasto´s active engagement in networks both local and global sustains a flow of knowledge into the company. As a result, they attain new knowledge and learn as an organization, which potentially increases innovative capability. However, they may find themselves in a Catch-22 situation, where they collaborate in networks to gain knowledge and generate new ideas; but by doing so, they become so preoccupied with networking that they potentially overlook potentials of more radical product changes and development that often take place in internal R&D projects. This can potentially impede innovative capability.

The first and second component of the Knowledge Centric Management framework was *Soft Power Management* and the *Ecology of Learning.* Based on the evidence and empirical analysis of Plasto, the components seem justifiable. The third and fourth component was *Spatial Networks* and *Fertilizing Knowledge*. These two components seem to be found in Plasto´s managerial operations, with some concerns highlighted as to whether too much networking may harm the firm´s potentialities for more radical innovations. Plasto coincides to a large extent the elements of the Knowledge Centric Management framework presented in Figure 7. Based on the above, I have established a model that depicts key features of the Knowledge Centric Management concept, illustrated in Figure 12.

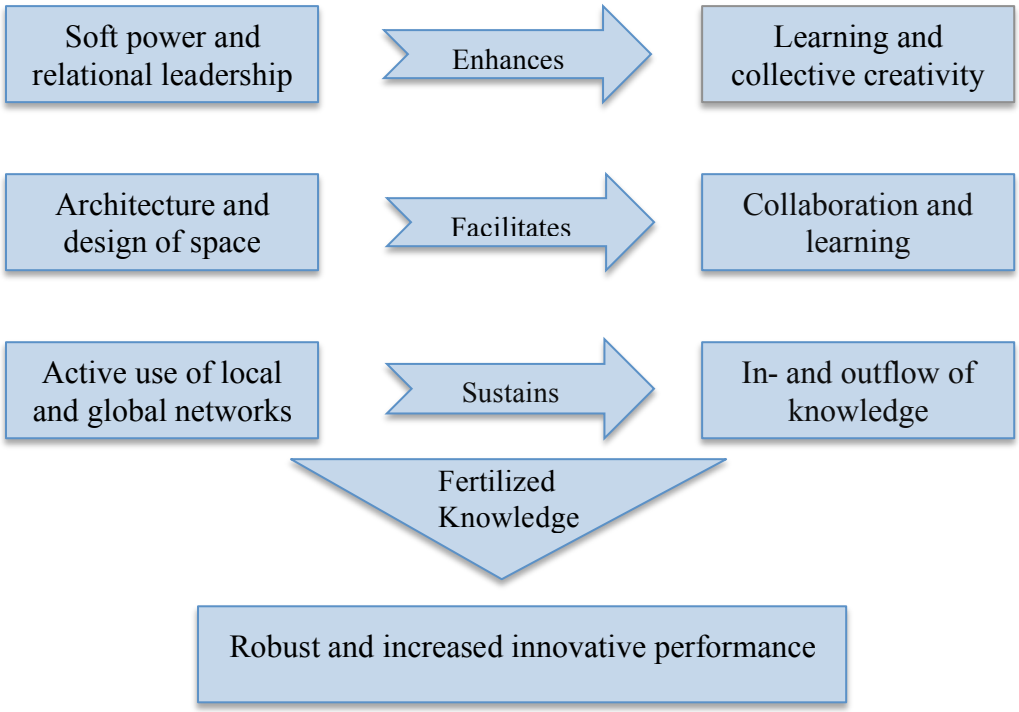

Figure 12: The Knowledge Centric Management Concept (Author´s own model)

In conclusion, and as depicted in the Knowledge Centric Management framework, it is demonstrated that managerial efforts and organizational strategies interconnects the firm both internally and externally. Internally, through soft power and relational leadership, effective knowledge spills and interaction enhances competence through co-work and learning, resulting in collective creativity. Moreover, architecture of office landscapes and managerial factors facilitate collaboration and learning. Externally, the firm connects with distant and resourceful assets in spatial networks, which sustains a flow of knowledge into the firm. I find that the framework is representative to Plasto, with improvements needed in ensuring that enough resources are put into fertilizing knowledge and commercializing research made in partnerships. Furthermore, the lack of an own company product line is a weakness for the future. Plasto are nevertheless enviously transparent, showing extreme willingness to learn and they are actively focusing on raising their competency levels. These are lessons and examples that should be followed for other firms.

Some final reflections are that in the era of the knowledge economy and increased globalization, no firm can ever assume that their competitive advantage is stable and everlasting. Knowledge Centric Management, from a microeconomic perspective, is a step towards smarter, more innovative firms, where individuals can grow and develop themselves aligned with the firm thriving and innovating. Knowledge Centric Management, from a

macroeconomic perspective, can be seen as a micro-step towards strengthening national economies, seen that the combination of technology and knowledge in Norwegian companies and milieus, secures the movement of production from abroad, reshoring into Norway. Furthermore, what Norway need is increased emphasis on research and development at firms, and in that regard, not least do they need successful commercialization of research. In 2017, the government of Norway will release its strategic and political response towards securing the nation´s industrial interests in light of new technologies, robotization and digitalization that will change the way firms conduct work[5]. Knowledge Centric Management can have an impact for firms seeking to strategically change and adapt to these developments.

The overall aim is henceforth a strengthened national competitiveness, productivity and exploitation of resources. Moreover, the smaller size of the firm makes knowledge sharing easier. The fact that Plasto are a smaller firm in a local community, where individuals know each other well, is a factor in itself for good co-working collaborations and knowledge sharing. In a pressurized economic climate, where innovation seems the only option to survive for smaller firms like Plasto, one can question where the line must be drawn for a firm being innovative "enough". Does all innovation need the scalability sought for in places such as Silicon Valley? Do all ideas have to encompass the potentialities of becoming game changers? I would argue that one could not have a world full of game changers; there is a natural limit to that. What we may need the most, is innovation that has a stable impact, particularly on a smaller scale and in a local context. One hundred Plasto firms have greater impact on national economies than one Statoil or Telenor. The aphorism of a rising tide that will lift all boats can be viewed as the notion that the more research-based and knowledge-intensive firms become, the more innovative they will be. This can have great collective economic impact on local and global scales. Perhaps the most important reminder of all is that technology becomes so smart, one forgets the processes behind *real* value-creation and innovation. Of all things written in this work, the most powerful lesson is that people make the organization and the innovation. That should always remain a priori for any firm seeking to excel in a complex and knowledge-intensive economic climate. Remembrance of this lays in the Latin origin for company, the word ´companio´, meaning companion, friend or partner.

[5] Official statement from the Ministry of Trade, Industry and Fisheries in Norway (Nærings- og Fiskeridepartementet, 2016)

6.3 Implications of Study

In this section I disclose any implications the study may have for firms and organizations alike. Firstly, it is difficult to evaluate Knowledge Centric Management and identify concrete results that the implementations of knowledge-centric approaches lead to for firms. This is because much of the behaviors and conducts of knowledge management is not systemic or formalized, and it is often based on subjectivity, without knowing specific responses one may hope to achieve by its implementation. The use of a knowledge-centric approach is also highly contextual to each individual organization. In addition lies the nature of human relations, which are dynamic, continuous and vulnerable to rapid change and fluctuations. Human relations cannot be measured by metric; these relations are as difficult to measure as friendships. Still, this thesis has established Knowledge Centric Management as a feasible framework for organizational change, learning and innovation. One of the main implications of this study has been to identify specific traits, competencies and skills required by management to socially embed learning resources and processes within the firm and through networks. This is especially true in the context of small and medium sized firms, and specifically those creative small and medium sized firms that are often celebrated as the main source for job creation through innovation. The case of Plasto shows that a smaller sized firm is more lucid and it remains less complicated to establish good relations and trust between managers and employees. Another implication is, given that managers are relationally competent, and utilize their relational skills fruitfully, effective Knowledge Centric Management can unleash a creative environment that spurs new ideas and innovation. For larger firms and organizations, increased complexity generally lies in more bureaucratic structures intended secure effective delegation of tasks. Responsibilities are consequently pulverized down-wards in a larger firm or organization. Here, the Knowledge Centric Management concept might require a decentralized structure, where individuals and organizational cells are provided a certain degree of autonomy. In such a way, employees on all levels become embraced in a structure in which they can influence more directly. Such an approach demonstrates how Knowledge Centric Management prospects a feasible and holistic framework for innovation at firms small and large.

6.4 Suggestions for Further Study

Emotional intelligence and affective maturity can be a core competence in the understanding of other people. It can be argued that we need newer training methods and better basic knowledge to reimburse relational competence in leaders. This is something I find highly relevant vis-à-vis elements that leaders need in strategic approaches to Knowledge Centric Management. Relationship building is arguably our time´s greatest pillars within the leadership and organizational theory, and must by my considerations be further studied.

Further studies on the relational aspect of leadership contra increased collaboration and innovative abilities might have produced a more distinct answer to relational competency´s impact on innovative performance at firms. Specifically, differences between men and women in relational skills were briefly noted, where men have greater potential for improvement in relational skills and competency. Further study on relational competence and the role of gender is needed. Moreover, research on architecture and design of office landscapes can provide more distinct answers to its impact on knowledge spill overs and organizational learning.

Knowledge management was suggested to be a strategy to which supports management objectives of learning and innovating, serving as a mean rather than an end. A final suggestion is developing the proposed Knowledge Centric Management framework further with regards to larger sized firms and organizations.

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8 Appendices

8.1 Appendix 1: Interview Guide Management

Intervju Guide Plasto – Ledelsen

Jeg går master i Entreprenørskap, innovasjon og samfunn og skriver om noe som kalles Knowledge Centric Management, som kan oversettes til kunnskapsledelse eller kunnskapssentrert ledelse. Det går i all hovedsak på å rette fokus på kunnskap når man tenker på eller utøver lederskap. Veldig kort fortalt, er de foreløpige teoretiske elementene i kunnskapsledelse utøving av personorientert ledelse, dannelse av læringsmiljø i bedriftene, bruk av lokale og globale nettverk/klynger for økt tilnærming av ny kunnskap og effektiv implementering av tilegnet kunnskap. Målet med kunnskapsledelse er å bidra til organisatorisk endring, læring og konkurransefortrinn i form av innovasjon.

Det blir satt mye fokus på at teknologisk utvikling og automatisering er lønnsomt, men vil kreve stor omstilling og endring i bedrifter og næringene for å holde følge med utviklingen. Oppgaven min kan sies å gjøre et forsøk på å gi noen få løsninger på noen av disse utfordringene fra et leder- og bedriftsperspektiv.

Anonymitet kan sikres ved ønske.

Bakgrunnsinformasjon

Jeg ønsker å etablere personlig kontakt med intervjuobjektet, derfor er denne delen av intervjuet rettet mot hva angår den ansattes bakgrunn både i forhold til utdanning og arbeid.

1. Hva er navnet ditt og din alder?
2. Hvilken utdanning har du og hva er din profesjonelle bakgrunn?
3. Hvor lenge har du jobbet i Plasto?
4. Hvor har du jobbet tidligere?

Bedriften og intervjuobjektets arbeidssituasjon

Tema her retter seg mot bedriften Plasto og intervjuobjektets arbeidssituasjon i Plasto og hvilken arbeidsoppgaver og ansvar han eller hun har i bedriften.

5. Hva er din nåværende stilling i Plasto?

    a. Hvordan har karrieren internt i Plasto vært?
6. Hva innebærer stillingen din i forhold til daglige gjøremål og ansvar?
7. Hvordan ser en typisk arbeidsdag ut for deg?
    a. Utgjør dine arbeidsoppgaver hovedsakelig individuelle oppgaver eller i samarbeid med kolleger?
    b. Hvordan jobber du med kolleger og team, og hender det at forskjellige team samarbeider på tvers?

Kunnskapsdeling- og utveksling

Hovedtemaet her er intervjuobjektets tanker og erfaringer rundt kunnskapsdeling- og utveksling ***som leder*** *i bedriften. Målet med denne seksjonen er å kartlegge hva den ansattes oppfatning av hva kunnskapsdeling innebærer og hans/hennes erfaringer med kunnskapsdeling innad i bedriften.*

8. Hvordan vil du definere kunnskap i forhold til arbeidet ditt?
9. Hva betyr kunnskapsdeling for deg?
10. Kan du relatere til deling av kunnskap og erfaringer i en arbeidssituasjon?
11. Er kunnskapsdeling verdsatt i Plasto, etter din mening?
    a. Hvis ja, kan du gi ett eller flere eksempler på tilfeller hvor kunnskap og erfaring blir delt på i jobb?
12. Føler du at du og dine ansatte er villige til å dele kunnskap og erfaring
    a. Har du noen gang opplevd at medarbeidere har vært motvillig til å dele kunnskap?
13. Hvordan jobber dere med kompetanseutvikling i Plasto?

Tilnærming av kunnskap

Målet med dette temaet er å utforske på hvilke(n) måte ledelsen stiller seg til tilnærming av ny kunnskap på lokal-global nivå.

14. Søker dere aktivt etter ny kunnskap?
    a. Hvis ja, på hvilke måter? Prosjekt deltagelse?
15. Samarbeider dere ofte med andre virksomheter? (Organisasjoner, kunnskapsinstitusjoner, virkemiddelapparat, konkurrenter?)
    a. Hvordan følger dere med på omgivelsene, blant kunder, hos konkurrenter, ny teknologi etc.?

16. Har dere fokus på kunnskapsutveksling på tvers av bedrifter og samarbeidspartnere?
    a. Er dette organisert utveksling som oftest eller skjer det gjennom mer tilfeldige møter, f.eks. konferanser, messer, seminarer, bruk av IT?
17. Hvor viktig er tilnærming og utveksling av kunnskap fra eksterne omgivelser?

Lederskap

Temaet her er lederskap i Plasto. Målet er å få innsikt i hvilken type lederskap og ledere som styrer Plasto, samt å få inntrykk av hva som kategoriserer lederen og hvilken verdier han eller hun innehar. Er ledelsen relasjonssterk? Kategoristikker her er: menneskeinteresse, relasjonsbygging, emosjonell modenhet, tillit, fokus på utvikling av mennesker, resultatorientert, jfr. Spurkeland 2012, s. 17.

18. Hvordan vil du beskrive deg selv som leder?
19. Hvordan vil du kategorisere ditt forhold til dine ansatte?
20. Vil du påstå at du er en personorientert eller produksjonsorientert leder?
21. Delegerer du ansvar ofte?
    a. Er tillit viktig på tvers av bedriften?
22. På hvilken måte har avdelinger og diverse team rådighet til å ta beslutninger?
23. I hvor stor grad er det interaksjon mellom ledelse og medarbeidere?
        i. Er dette mer i formelle eller uformelle settinger?
    b. Har du noen refleksjoner rundt det å verdsette og fremheve dine ansatte som mennesker og ressurser?
24. Forsøker du aktivt å utvikle dine ansattes personlige kunnskaper og evner?
    a. Hvis ja, hvordan?

Læring i Organisasjonen

Målet med dette temaet er å få innsikt i læringsmiljøet i bedriften, fra et innovasjonsperspektiv. Jeg ønsker å utforske hvorvidt intervjuobjektet føler de lærer når de jobber, på hvilken måte ledelsen forsøker å tilrettelegge for læring i arbeid og hvilken påvirkning dette har på innovasjonsevnen.

25. Føler du at Plasto er en lærende organisasjon?
    a. Lærer du som leder mye i jobben din?
26. Hvordan tilrettelegges det for læring blant de ansatte?
27. I hvilken grad mener du at kontorene og arbeidsplassen er/eller kan konstrueres og tilrettelegges slik at de ansatte kan lettere omgås og det skapes et interaktiv arbeidsmiljø?

a. Er Plasto som arbeidsplass en god arena for kunnskapsutveksling, etter din mening?

28. Hvordan jobber dere med nyskapning/produktutvikling?
    a. Inngår dette gjerne i den daglige driften? Er det egne folk som er dedikert til dette? Organiseres det gjennom prosjekter? Foregår det i samarbeid med eksterne aktører som kunder eller FoU?
29. Hvorfor er forskning så viktig for å lykkes i næringslivet?

Avsluttende spørsmål

30. Er det noe du føler hindrer kunnskapsdeling i din bedrift?
    a. Hvis ja, hva kan gjøres annerledes?
31. Hvordan ser fremtiden ut for selskapet?
    a. Er der utfordringer i fremtiden som vil kreve oppgradering kunnskapsmessig?
32. Det blir satt mye fokus på at teknologisk utvikling og automatisering er lønnsomt, men vil kreve stor omstilling og endring i bedrifter og næringene for å holde følge med utviklingen. Hvordan stiller du deg til dette?
33. Er det noe du vil tillegge som kanskje ikke er blitt dekket?

Takk for at du deltok.

8.2 Appendix 2: Interview Guide Employees

Intervju Guide Plasto – Ansatte

Jeg går master i Entreprenørskap, innovasjon og samfunn og skriver om noe som kalles Knowledge Centric Management, som kan oversettes til kunnskapsledelse eller kunnskapssentrert ledelse. Det går i all hovedsak på å rette fokus på kunnskap når man tenker på eller utøver lederskap. Veldig kort fortalt, er de foreløpige teoretiske elementene i kunnskapsledelse utøving av personorientert ledelse, dannelse av læringsmiljø i bedriftene, bruk av lokale og globale nettverk/klynger for økt tilnærming av ny kunnskap og effektiv implementering av tilegnet kunnskap. Målet med kunnskapsledelse er å bidra til organisatorisk endring, læring og konkurransefortrinn i form av innovasjon.

Det blir satt mye fokus på at teknologisk utvikling og automatisering er lønnsomt, men vil kreve stor omstilling og endring i bedrifter og næringene for å holde følge med utviklingen. Oppgaven min kan sies å gjøre et forsøk på å gi noen få løsninger på noen av disse utfordringene fra et leder- og bedriftsperspektiv.

Anonymitet kan sikres ved ønske.

Bakgrunnsinformasjon

Jeg ønsker å etablere personlig kontakt med intervjuobjektet, derfor er denne delen av intervjuet rettet mot hva angår den ansattes bakgrunn både i forhold til utdanning og arbeid.

1. Hva er navnet og din alder?
2. Hvilken utdanning har du og hva er din profesjonelle bakgrunn?
3. Hvor lenge har du jobbet i Plasto?
4. Hvor har du jobbet tidligere?

Arbeidssituasjon

Tema her retter seg mot intervjuobjektets arbeidssituasjon i Plasto og hvilken arbeidsoppgaver og ansvar han eller hun har i bedriften.

5. Hva er din nåværende stilling i Plasto?
    a. Hvordan har karrieren internt i Plasto vært?

6. Hva innebærer stillingen din i forhold til daglige gjøremål og ansvar?
7. Hvordan ser en typisk arbeidsdag ut for deg?
    a. Organiserer du dagen din selv eller blir du gitt arbeidsoppgaver?
    b. Utgjør dine arbeidsoppgaver hovedsakelig individuelle oppgaver eller i samarbeid med kolleger?
    c. Hvordan ser en vanlig arbeidsdag ut for deg?

Kunnskapsdeling- og utveksling

*Hovedtemaet her er intervjuobjektets tanker og erfaringer rundt kunnskapsdeling- og utveksling **som ansatt** i bedriften. Målet med denne seksjonen er å kartlegge hva den ansattes oppfatning av hva kunnskapsdeling innebærer og hans/hennes erfaringer med kunnskapsdeling i bedriften.*

8. Hva betyr kunnskapsdeling for deg?
9. Kan du relatere til deling av kunnskap og erfaringer i en arbeidssituasjon?
10. Hvordan er holdningen til kunnskapsdeling verdsatt i Plasto, etter din mening?
    a. Kan du gi eksempler på en eller flere tilfeller hvor kunnskap eller erfaring er blitt delt i en arbeidssituasjon hos Plasto?
    b. I hvilken grad er kunnskapsdeling strukturerte og tilrettelagte prosesser?
11. Føler du at dine kollegaer og lederne er villige til å dele kunnskap og erfaringer?
    c. Har du noen gang opplevd at kollegaer eller ledere har vært motvillige til dele kunnskap?
12. På hvilken måte er Plasto en arena for læring og utveksling av kunnskap?
13. I hvilken grad samarbeider dere med eksterne aktører når dere jobber mot nye løsninger?
14. Hvilken betydning har samarbeid med eksterne aktører hatt for kunnskapshevning og innovativ evne for dere? (kunder, leverandører, FoU institusjoner)

Ledelsen

Formålet med dette temaet er å få innblikk, fra de ansattes perspektiv, hvilken type lederskap lederne i bedriften kan kategoriseres i og hvordan dette kan ha innflytelse på læring i bedriften.

15. Hvordan vil du beskrive dine ledere?
    d. Ville du kategorisert dem som autoritær eller mer ”myk” i måten de utøver lederskap på?

16. Hvordan er ditt forhold til lederne?
    e. Føler du at du har et sterkt og genuint forhold til lederne?
17. Føler du at du kan dele tanker og uttrykke deg til dine medarbeidere?
    f. Føler du at du blir hørt?
18. På hvilken måte er arbeidet ditt meningsfullt?
    g. I hvilken grad vil du si at ledelsen har/eller kan ha innflytelse på dette?
19. I forhold til måten bedriften styres, tillater det deg å utforske og selv-styre ditt arbeid?
20. Føler du at arbeidsplassen din stoler på deg og er trygg på dine evner?
21. Føler du at arbeidsplassen tilrettelegger for at du kan utvikle kompetansen din?
    a. Hvis ja, på hvilken måte?

Læring i organisasjonen

Målet med dette temaet er å få innsikt i læringsmiljøet i bedriften. Jeg ønsker å utforske om intervjuobjektet føler at de lærer når de jobber, og på hvilken måte de ansatte føler ledelsen har innflytelse på læring i arbeid. Jeg forsøker også å undersøke i hvilken grad de ansatte føler kontorstrukturen tilrettelegger for læring.

22. Lærer du mye i jobben du gjør i Plasto?
    h. Hvis ja, i hvilke(n) situasjon har du følt at du lærte noe (har det skjedd under spesifikke arbeidsoppgaver, teamarbeid, kurs, eller generelt?)
23. Etter din mening, tilrettelegger ledelsen for læring på noen måte?
    i. Hvis ja, har måten de tilrettelegger på noen effekt i din mening?
24. Føler du at måten filialene og kontorene er konstruert på gjør det lettere for deg å omgås og ha et interaktiv forhold til dine medarbeidere?
    a. På hvilken måte vil du si det er en passende arena for interaksjon?
25. Er du (og dine kollegaer) bevisst på å utfordre eller stille seg kritisk til normer i måten dere utfører arbeid på?
26. På hvilken måte kan Plasto sies å være et læringsmiljø?

Avsluttende spørsmål

27. Er det noe du føler hindrer kunnskapsdeling i din bedrift?
    j. Er det noen fremtidige utfordringer som hindrer oppgradering av kompetanse og teknologi?
28. Ser du verdien i å lære mens du jobber?
29. Ser du verdien av å dele kunnskap på jobb?

30. Er det noe du vil tillegge som kanskje ikke har blitt dekket?

Takk for at du deltok.