Customer Knowledge Management at Komatsu Forest

A descriptive study with exploratory insights about the integration of knowledge from customers at Komatsu Forest

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Spring semester 2011
Master thesis, one-year, 15 hp
ACKNOWLEDGEMENTS

We would like first to thank our thesis supervisor Thommie Burström, without whom we could not have accomplished this research: his comments and feedbacks have been really helpful to see the direction we had to follow. Secondly, we would like to thank Komatsu Forest for the collaboration and particularly Britta Näsman who enabled us to have contacts within Komatsu Forest in Umeå.

The accomplishment of this research required hard work and motivation and it was certainly the most enriching experience during this year at Umeå University. Writing a thesis was something new for us and enabled us to experiment a new way of learning.
ABSTRACT

In a world where the customer is highly demanding and where the only way for a company to succeed is to satisfy him, who better knows how to satisfy the customer than the customer himself? Facing this truth, we have recently seen the emergence of systems dedicated to customer knowledge management (CKM), which aims at always better satisfying the customer. If a firm aims at satisfying its customers, the value provided in the firm’s market offerings should be the cornerstone of its strategy (Anderson, Narus and Narayandas, 2008). Companies recognize the importance of maximizing the value they intend to provide through two different perspectives: its internal management and its external orientation (Slater, 1997, p.164). Over the last fifteen years, we have seen a shift in companies’ orientation. Internally, the role of knowledge inside organizations has become central, and externally the customer has been attracting most of the attention among business managers and academia. Providing higher value is more likely to be achieved in companies that have adopted a market orientation and develop processes with the aim to have an efficient knowledge-management. Customer Knowledge Management is the evolution of knowledge management and of the customer orientation of the firm, and is therefore a powerful way to generate more value for the customers. However, as it is a relatively new subject, it has been investigated in few industries, such as the software industry.

We can therefore wonder if CKM is applicable in other industries, since the extent of research has been quite limited so far. Accordingly, we have decided to focus on a specific company specialized in forest machinery: Komatsu Forest. We have realized a qualitative research and followed the design of a case study in order to investigate how Komatsu Forest can integrate the knowledge from its customers in order to increase the value of its business market offerings. Hence, our research led us to study in depth the current use of CKM at Komatsu Forest and to investigate the possible formal implementation of practices in the future.

The results of our research have shown that Komatsu Forest is able to integrate knowledge from its customers in order to increase the value of its market offerings. First, we have found out through our case study research that Komatsu Forest is actually already using informally some methods aiming at integrating knowledge from its customers. We have conducted interviews with key employees of Komatsu Forest, who have a function related to the use of inputs coming from customers. We have thus made a diagnosis of the actual situation of Komatsu Forest in regards of CKM. Then, from this basis and with the use of our empirical study, we have evaluated the possibility for Komatsu Forest to implement formally the different CKM practices we have identified in the literature review. We showed that Komatsu Forest have different ways to integrate formally knowledge from its customers in the short, medium and long terms in order to increase its market offering.

Finally, we have also tried to make a theoretical contribution to the field of CKM by pointing out that most companies are between two important stages of their evolution in regards of CKM: the informal reaction to the need of using knowledge from customers and the formal implementation of CKM practices.
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Chapter 1: INTRODUCTION

1.1 Background

In a world where the customer is highly demanding and where the only way for a company to succeed is to satisfy him, who better knows how to satisfy the customer than the customer himself? Facing this truth, we have seen recently the emergence of systems dedicated to customer knowledge management (CKM), which aims at always better satisfying the customer.

Anderson, Narus and Narayandas emphasize that if a firm aims at satisfying its customers, the value provided in the firm’s market offerings should be the cornerstone of its strategy (Anderson, Narus and Narayandas, 2008). Value is defined as the “expression in monetary terms of the economic, technical, service and social benefits a customer firms receives in exchange for the price it pays for a market offering” (Anderson, Narus and Narayandas, 2008). This concept is nevertheless not absolute since it is a matter of perception (Gale, 1994, cited in Woodruff, 1997, p. 141): the perception of the company and that of the customer can therefore be different.

Companies recognize the importance of maximizing the value they intend to provide through two different perspectives: its internal management and its external orientation (Slater, 1997, p.164). During the last fifteen years we have seen a shift in companies’ orientation. Internally, the role of knowledge inside organizations has become central, and externally the customer has been attracting most of the attention among business managers and academia.

From an internal point of view, knowledge plays an important role among resources a firm possesses, and receives more and more attention. Indeed, recent researches during the past two decades have particularly shed light on the management of knowledge, commonly defined as knowledge-management (Nonaka & Takeuchi, 1996; Spender, 1996). As a consequence, knowledge-management in an organization influences its capacity to satisfy its customers and to succeed in the marketplace.

From an external perspective, the firm’s orientation has also concentrated researchers’ efforts in understanding the drivers of a company performance. It is worth noticing that it is mainly the market-orientation of companies that has been subject to an increasing attention among researchers. Indeed, market-orientation is considered as being central for a firm to improve its competitive performance (Narver & Slater, 1990). However, caution is required with this term: the marketing concept of the past literature (80’s-90’s) was understood as the market orientation of today. It is important to specify that having a marketing approach does not mean that the firm is market oriented. Being market orientation means a lot more and has become strategic for organizations willing to better understand their customers and deliver superior customer value (Börjesson & Dahlsten, 2004). This concept has even evolved towards a customer orientation, which implies even closer relationships to the customers in order to better understand them (Day, 1994, p. 40).

Therefore, providing higher value is more likely to be achieved in companies that have adopted a market orientation and develop processes with the aim to have an efficient
knowledge-management. Any company willing to compete in today's global highly competitive marketplaces cannot ignore the continuous development of tools made to increase the acquisition of knowledge about and from the market. The central actor for a company in a market is the customer and its strategy has to be designed with the goal to increase the customer value of a market offering.

As a consequence, customer knowledge management has received a lot of attention in the past ten years. CKM practices are dedicated to gaining three types of knowledge: about the customer, to support the customer and from the customer (Desouza & Awazu, 2005). Customers possess knowledge about the products or services they buy, and they can contribute to a company’s learning (Zack, 2003). However, few companies have realized the learning potential from knowledge residing in their customers (Gibbert et al., 2002). In addition, it is only recently that researchers have tried to determine how companies can leverage knowledge from their customers in order to increase the value of their market offering. We consider that firms acquiring knowledge from their customers with the aim to increase the customer value it provides are at the front-end of market-orientation.

Given that CKM is relatively a quite new subject, it has not been investigated in all the industries. The only industries where this phenomenon has been observed are software, semiconductors and microelectronics. We notice that these particular industries deal with high-tech products. A reason could be that CKM is more applicable when a high amount of knowledge is needed to develop a product. Another explanation could also be that since it is specialized products, users are really demanding; that’s why their knowledge is useful. We can therefore wonder if CKM is applicable in all high tech industries, since the extent of research has been quite limited so far.

Accordingly, we have decided to focus on a specific company specialized in forest machinery: Komatsu Forest. The forest machines rely on an advanced technology and are highly specialized products that are sold in a relatively small market. On the market of forest machines, competitors are not numerous but the competition is tough due to the relative small number of machines sold per year. Consequently, satisfaction of the customers is an obligation for firms to survive in their competitive environment.

As previously said, using the knowledge from the customer is necessary to be a performing firm and to provide a maximal value to its customers. Komatsu Forest is in a market where the competition is increasing, which leads companies to be closer to their customers and to develop solutions that will be above their expectations. We believe that techniques originating from CKM can enable Komatsu Forest to integrate knowledge from their customers in order to increase the value of its market offerings.

The aim of this research is to study the eventual current use of CKM techniques and the possibility of future implementation of formal practices aiming at integrating knowledge from customers at Komatsu Forest, for the company to increase the value of its market offerings and to maximize its customers’ satisfaction.
1.2 Problem statement

As a guideline for our research, we will try to answer the following question:

**How can Komatsu Forest integrate knowledge from its customers in order to increase the value of its market offerings?**

1.3 Purpose

In order to investigate how Komatsu Forest can integrate knowledge from its customers so as to increase the value of its market offering, we will have to understand the current practices used before investigating how other formal practices could be implemented. At first we will try to understand if and which CKM practices are currently applied at Komatsu Forest. Secondly, after performing a diagnosis of the current situation, we will investigate how formal practices aiming at integrating knowledge from customers can be implemented. To achieve our aim, studying how knowledge is treated within Komatsu Forest and what is the orientation of the company will be necessary.

Lots of researches have been conducted quite recently to study this specific area but only in specific industries such as software companies or semiconductor companies. Therefore, we intend to investigate this approach in a business market by studying in depth the case of Komatsu Forest.

We will first review all the theories necessary to get a deep understanding of the subject and what is at stake. From this, we will identify the tools enabling to integrate knowledge from customers that are possibly applicable. We will then see if and how these tools could be implemented at Komatsu Forest through a case study.

1.4 Limitations

Our research had to be conducted within a limited time frame. It naturally implies that we did not have the time necessary to investigate in-depth all the elements having a possible impact on the implementation of CKM practices at Komatsu Forest. Our research has rather to be considered as being a first attempt to evaluate the possible implementation of CKM practices in the firm, with the aim to make Komatsu Forest’s employees aware of the these practices.

1.5 Outline of the study

We have based our research on the following structure (Figure 1 below).
Figure 1. The structure of our research
Chapter 2: SCIENTIFIC METHOD

We will now explain the choice of our subject and introduce the scientific method that we will use for our research study. The research philosophy will explain how we will see and study the reality by clarifying the ontological and epistemological considerations. After clarifying the purpose of our research, we will specify our research approach and research design. Finally, we will explain our choices of the theory.

2.1 Choice of the subject

During this year of study in Umea, we have taken different courses that were in relation with the growth of the firm, product development, value creation, knowledge management or customer orientation. It gave us the certitude that progressive firms have to understand and implement the latest practices that could help them to better evaluate what is of value for their customers. We are convinced that it is central for any firm to improve its performance and to succeed in the marketplace. Through the reading of an article about Customer Knowledge Management, we saw that using the knowledge from customers was a new practice and we saw a lot of potential in it. It interested us particularly and gave us the motivation to know more about the subject. After the reading of other articles on the subject, it is naturally that we decided to write our thesis on this subject, which has emerged only recently in the literature.

Besides we thought that it would be particularly interesting to realize an in-depth case study of a company located in Umea. That is why we took the opportunity of having a good contact with Komatsu Forest in order to implement in a practical case what we have learnt during this year. The choice of Komatsu Forest was also guided by the fact that it sells high-technology products, a field that is generally suitable for the implementation of CKM practices.

2.2 Research philosophy

When conducting a research it is central to specify the research philosophy behind it, which is characterized by the concept of epistemology and ontology (Bryman & Bell, 2007). We can notice that ontology is concerned with the nature of social entities and helps to determine whether social entities are influenced by the action of social actors, or whether they exist independently from social actors (Bryman & Bell, 2007). The first assumption is called constructivism, when social phenomena and their meanings are accomplished by social actors. On the opposite, objectivism is when social phenomena are external to the researcher and independent of the social actors. When studying the actual practices at Komatsu Forest and investigating the formal implication of CKM practices, we made an attempt to see it from the perspective of each of the interviewee. We tried to discover their preconceptions and ways of thinking in order to understand their truth. We have studied a phenomenon involving social actors who have an influence on it, and we studied the reality through the eyes of these social actors (Bryman & Bell, 2007). Therefore, we were constructivist while observing the reality, which had an influence on the method of our research and on the way we have understood how Komatsu Forest can use the knowledge from its customers.
In addition to the ontological consideration, we need to make clear how we study the reality. Epistemology refers to how we intend to study the real world, and entails three different angles: positivism, interpretivism and realism (Bryman & Bell, 2007). We looked at what we have studied with an interpretivist view, which went along with our ontological assumptions. The objective of our thesis was to study the implementation of techniques related to the management of customers’ knowledge in a specific context. Hence our view was not positivist nor realism, as we did not have an objective endeavour with quantifiable observations. As we previously said, we tried to study the reality through the eyes of Komatsu Forest’s employees. We have got information, perceptions, descriptions, and insights on what and how the firm is currently doing, and how it could implement formally CKM practices. We also assumed that implementing techniques in a specific context is complex and is not predictable nor follow a scientific pattern.

2.3 Purpose of the research

The purpose of our research is to investigate how Komatsu Forest can integrate knowledge from its customers so as to increase the value of its market offering. In order to achieve this, we will have to understand the current practices used before investigating how other formal practices could be implemented.

A research can be classified into three different ways: exploratory, descriptive and explanatory (Saunders et al., 2004). An exploratory research is essentially for new topics with new questions and research areas, whereas explanatory refers to research that focus on the reason of why a particular phenomenon occurs. Our research was therefore rather descriptive, as we aimed at describing a particular element in a particular situation. We have also integrated some exploratory insights in order to understand how some formal customer knowledge management practices are suitable for Komatsu Forest.

2.4 Research approach

We have first gathered relevant theory concerning customer knowledge management and the areas in which it stems from. Thanks to our theoretical research, we were able to elaborate a theoretical framework, allowing us to fully comprehend and apprehend this phenomenon. This theoretical framework enabled us to have a solid foundation while collecting empirical data and assess how it could be applicable at Komatsu Forest. Indeed, on the basis of what is known about customers’ knowledge, we have deduced a theoretical framework “that must then be subjected to empirical scrutiny” (Bryman & Bell, 2007, p.11). Consequently, the logic that we have adopted is called deductive: we went from the theory to the reality. We know that a deductive approach commonly starts from the theory in order to formulate afterwards hypotheses, which will be confirmed or rejected thanks to a data collection (Bryman & Bell, 2007, p.11). In our case, we have not elaborated hypotheses but a theoretical foundation and from this point we have gathered empirical data and analyzed how it could be applicable in a specific reality case, which is Komatsu Forest. However, as Bryman and Bell (2007, p.15) stated, “To a large extent, deductive and inductive strategies are possibly better thought
of as tendencies rather than as a hard-and-fast distinction”. The deductive approach was our “tendency” even if we did not stick strictly to all the facets of this approach.

The research strategy that we have adopted was qualitative. Qualitative study is usually more associated with the induction approach that aims at generating theory (Bryman & Bell, 2007, p.14). In the same way, quantitative study is usually more associated with the case of a deduction approach (Bryman & Bell, 2007, p.14). However, given that our research question aimed at verifying how a theory is applicable to a specific company, a qualitative strategy associated with a deductive approach was more adapted. A qualitative research has provided us with more flexibility than a quantitative one as well as the points of view of the participants, that is to say Komatsu Forest’s employees being in relation with the customers and the products. It enabled us to grab a contextual understanding of the industry. Since our research question implied a process orientation, a qualitative research was also more appropriate.

2.5 Research Design

According to Yin (1994, p. 5), the choice of the strategy depends on three conditions: the type of research question, the extent of control we have over behavioral events and the level of focus on contemporary events (in opposition to historical ones). Yin (1994, p. 5) provides a table defining these characteristics for each strategy (see table 1 below).

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of research question</th>
<th>Requires control of behavioural events</th>
<th>Focus on contemporary events</th>
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<tr>
<td>Experiment</td>
<td>how, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>how, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>how, why?</td>
<td>No</td>
<td>Yes</td>
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In our situation, our type of research question was a ‘how’. We aimed at examining contemporary events but the relevant behaviors could not be manipulated. Consequently, the table clearly indicates that case study was the adapted method.

The research design was therefore a case-study. As Bryman and Bell (2007, p.62) points it out, “exponents of the case study design often favour qualitative methods, such as participant observation and unstructured interviewing, because these methods are viewed as particularly helpful in the generation of an intensive, detailed examination of a case”. We have studied intensively a single case, and specifically a single organization. Even if customers’ knowledge management is a relatively recent approach, there are some researches available for us to fully understand it. Nevertheless, this approach has not been studied in various industries. That is why we have decided to
focus on a specific business to business industry, which is the forest machine industry. In this context, we focused on Komatsu Forest, which has its headquarters in Umeå. We have tried to provide a deep understanding of customer knowledge management and its applicability in this company. A case study is “an object of interest in its own right and the researcher aims to provide an in-depth elucidation of it” (Bryman & Bell, 2007, p.63). This kind of case study is called a revelatory case. Indeed, a revelatory case exist “when an investigator has an opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation” (Yin, 1984).

2.6 Choices of theory

The choice of theory was an important part of our work in order to answer the research question. A good selection is essential because it will be the basis of our theoretical framework, which itself will impact our analysis and recommendations. Our theoretical framework is composed by the secondary data we collected linked with the fundamental theories of the fields we studied. Theories and secondary data originate from research articles, reports, white papers, manuals and books that we obtained from Umea University’s databases and from direct search on the Internet. The figure below illustrates how we proceeded to perform our analysis.

Looking at our theoretical review, we have based it on the fundamental researches made by recognized authors in their field. In order to find out these recognized authors we have looked at the literature review made by researchers and compare the different sources they have used. Hence, it was possible for us to quickly identify the key authors and the key articles to base our review on. We present below the table 2 that gathers the main theories and their related authors. We have elaborated this table according to the structure of our literature review, that is to say chronologically. The main concepts that we have decided to develop in the literature review are the central concepts evoked primarily in the introduction and that enabled us to understand entirely our research.

![Diagram](image-url)
study and where does CKM comes from (see figure 3 at the beginning of our literature review, explaining the theoretical framework).

Table 2. The main theories used and their authors

<table>
<thead>
<tr>
<th>Theories</th>
<th>Authors</th>
<th>Period</th>
<th>Central contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer value</td>
<td>Porter, M.</td>
<td>1980-1985</td>
<td>Competitive advantage and strategy</td>
</tr>
<tr>
<td></td>
<td>Grönroos, C</td>
<td>1980-1985</td>
<td>Link with relationship marketing</td>
</tr>
<tr>
<td></td>
<td>Anderson J. C</td>
<td>1990-2005</td>
<td>Understanding, creating and providing value on business markets</td>
</tr>
<tr>
<td></td>
<td>Narver J. C. &amp; Slater S.F.</td>
<td>1990-2004</td>
<td>Reference model: customer orientation, competitor orientation, and interfunctional coordination</td>
</tr>
<tr>
<td></td>
<td>Day G. S.</td>
<td>1989-2000</td>
<td>The role of capabilities</td>
</tr>
<tr>
<td></td>
<td>Desphandé R.</td>
<td>1993-2000</td>
<td>Link with corporate culture, innovativeness, and business performance</td>
</tr>
<tr>
<td>Resource-based view</td>
<td>Penrose, E.</td>
<td>1960</td>
<td>First to point out the importance of managing</td>
</tr>
<tr>
<td></td>
<td>Wernerfelt, B.</td>
<td>1985-1990</td>
<td>Development of the resource-based view</td>
</tr>
<tr>
<td></td>
<td>Barney, J.</td>
<td>1990-1995</td>
<td>Link between resources and competitive advantage</td>
</tr>
<tr>
<td>Dynamic-capabilities</td>
<td>Prahalad, C.K.</td>
<td>1990-2000</td>
<td>The dynamic view of the firm</td>
</tr>
<tr>
<td></td>
<td>Tece, D. J.</td>
<td>1995-2000</td>
<td>Capabilities are created by the individuals when</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>Nonaka, I.</td>
<td>1995-2000</td>
<td>Knowledge are created within the firm</td>
</tr>
<tr>
<td></td>
<td>Spender, J.C.</td>
<td>1995-2000</td>
<td>The firm is a place where knowledge are created</td>
</tr>
<tr>
<td></td>
<td>Grant, R. M.</td>
<td>1995-2000</td>
<td>The firm has to acquire and coordinate knowledge</td>
</tr>
<tr>
<td>Relationship marketing</td>
<td>Day G. S.</td>
<td>1995-2005</td>
<td>Source of business performance</td>
</tr>
<tr>
<td>Customer orientation</td>
<td>Day G. S.</td>
<td>2000-2005</td>
<td>One of the first to link strong customer relationships with greater value</td>
</tr>
<tr>
<td></td>
<td>Gulati, R., Oldroyd, J.B.</td>
<td>2000-2005</td>
<td>The four stages of the customer-orientation process</td>
</tr>
<tr>
<td>Customer Knowledge Management</td>
<td>Von Hippel, E.</td>
<td>1975-2010</td>
<td>Lead-users theory</td>
</tr>
<tr>
<td></td>
<td>Garcia-Murillo, M. &amp; Hannabi, H.</td>
<td>2003-2010</td>
<td>First to introduce the subject of knowledge from customers</td>
</tr>
<tr>
<td></td>
<td>Gibbert, M.</td>
<td>2003-2010</td>
<td>Identification of CKM practices</td>
</tr>
</tbody>
</table>

2.7 Conclusion of the scientific method

After explaining how we see the reality, that is to say our constructivist approach and our interpretivist view, we have introduced our purpose: we aim at describing the current practices of customer knowledge management practiced by Komatsu Forest if there are some, in order to explore if, and how, some other formal practices could be applied. Our research design is therefore a qualitative research called a case study, since it will be an in-depth analysis of one specific company. In order to serve our purpose, we will adopt a deductive approach: we will use the theory so as to be able to make a diagnosis of Komatsu Forest’s current practices and investigate which other practices could be implemented. In the next chapter (chapter 3), we will create the theoretical framework necessary to conduct our research. Afterwards (chapter 4), we will detail the concrete method we used to collect the necessary data to achieve our aim.
Chapter 3: LITERATURE REVIEW

The literature review is a major part of our thesis, covering different topics that are important in order to understand the origin of Customer Knowledge Management (CKM). Our literature review has two main objectives in relation to the final aim of our research.

First, we have reviewed the fundamental literature existing on the following subjects: value creation, market orientation, resource-based view, knowledge management, customer orientation, and customer knowledge management. We have tried to do it chronologically, so as to demonstrate the logical evolution of the theories over time, how they are related and how they complement each other. It also enabled us to really sense all the different implications for each theory. The literature review was the basis for our empirical study and has influenced the way we have interpreted the empirical data we had collected. That is why we decided not to neglect any aspect and deepened our study of the fields related to CKM.

Our second objective for this literature review was to provide an overview of what has already been done in the field of CKM and to detail the best practices that have recently emerged. As we previously stated, our research focus on the practical case of Komatsu Forest and how the company can use knowledge from their customers. That is why it is first important for us to have an excellent understanding of the different techniques that are or can potentially be in use at Komatsu Forest.

In the figure 3, we illustrate the evolution of the theories during the last 30 years and the relations between them. The objective of the firm is to improve its performance, which can be achieved by different ways. We focused on the generation of a greater value for the customers and on the gain of sustainable competitive advantage. The firm’s capacity to generate a greater value will be highly influenced by its internal management and its external orientation. The internal management of the firm mainly refers to how it exploits and manages its resources, whereas the external-orientation focus on the overall philosophy of the firm and how it scrutinizes its environment. We have seen that during the last 20 years, researchers and firms have not only impacted our view of the organization, but also the raison d’être of the firm. On one side, the resource-based view of the firm has had implications on the way companies are managed, and on the other side the market-orientation has led companies to change how they evaluate their environments. Following the development of the resource-based view, researchers have raised their interest for knowledge management. Besides, more and more companies consider themselves as customer focus and have re-organized their view of the market around the customer. Companies have therefore developed systems that aim at managing efficiently the knowledge internally and to organize the information they have about their customers, such as Customer Relationship Management (CRM) systems for example. The search for a greater efficiency in both knowledge management (KM) and in knowing the customers has conducted to the emergence of the customer knowledge management (CKM). It can indeed be seen as the combination of CRM and KM, and aims at integrating three types of customer knowledge: about the customer, for the customer and from the customer. The ongoing developments of the customer focus in the firm leads companies to learn more from their customers in order to increase the value of their offerings, which is what we will study at Komatsu Forest.
Figure 3. The theoretical framework
3.1 Customer Value

Michael Porter stated that superior performance requires the firm to possess a competitive advantage (Porter, 1980, cited in Slater, 1997, p. 164). He also affirmed that “competitive advantage grows fundamentally out of the value a firm is able to create for customers” (Porter, 1985, p.14). Thereby we understand that customer value is seen as the way to gain competitive advantage and be successful on the market. While in the past companies were searching for competitive advantages internally by improving the internal processes and structures, the trend has evolved: the new source of competitive advantage is now expected to come from more outward orientation towards customers (Woodruff, 1997, p. 139). Slater (1997, p. 166) even stated that the creation of customer value must be the reason for the firm’s existence and certainly for its success. In order to grab the exact meaning of customer value, we have gone through the definitions provided by the literature.

3.1.1 Definitions

Value has been defined as the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given (Zeithaml, 1988, p. 13). Monroe (1991, cited in Ravald & Grönroos, 1996, p. 20) explains that perceived value is the ratio of perceived benefits relative to perceived sacrifice. Customer value is the market perceived quality adjusted for the relative price of your product (Gale, 1994, cited in Woodruff, 1997, p. 141). With these definitions, an important notion introduced is “perception”. Indeed, the value provided by a firm to a customer is not absolute and depends on its perception. Following this reasoning, the customer’s perception of the value of an offering can be different from the firm’s perception. Woodruff (1997, p. 142) provides an even more precise definition: “customer value is a customer’s perceived preference for and evaluation of those products attributes, attribute performances, and consequences arising from use that facilitated (or block) achieving the customer’s goals and purposes in use situations”. This definition includes both the desired and perceived value and highlights that value comes from customers’ learned perceptions, preferences and evaluations (Woodruff, 1997, p. 142). To make this definition more understandable, we can have a look on the Customer Hierarchy Model (see below figure 4, Woodruff, 1997, p. 142).

![Customer Hierarchy Model](image)

Figure 4. Customer Value Hierarchy Model
The first column of this model presents the value desired by the customer. To begin with, customers think about products as a set of specific attributes and attribute performances (Woodruff, 1997, p. 142). They also learn to desire certain consequences in use situations according to their ability to help them achieve their goals and purposes (Woodruff, 1997, p. 142). The column on the right represents the customer’s satisfaction regarding the three levels of value desired presented in the left column. Moreover, it is important to notice that it is how customers perceive value that influences how they will act and buy on the marketplace (Woodruff, 1997, p. 143).

After introducing this model, we can observe that customer value is linked to customer satisfaction. Woodruff (1997, p. 142) explains that the concept of customer value suggests a strong relationship with customer satisfaction. This link between customer value and customer satisfaction requires a better understanding. Peter Drucker (1973, cited in Slater, 1997, p. 164) states that satisfying the customer is the mission and purpose of every business. Slater (1997, p. 164) explains that customer satisfaction is reached when superior value is delivered by the business. He claims that firms exist to provide a product or service because it is neither efficient nor effective for buyers to attempt to satisfy all their needs themselves (Slater, 1997, p. 164). Consequently, superior performance is the result of providing superior customer value (Slater, 1997, p. 164).

Ravald and Grönroos (1996) explain that customer value is a way to obtain satisfaction that in turn enables the creation of customer’s loyalty, which then begets re-buy and consequently the success for a firm. As a matter of fact, increasing customer value is one more time stated as essential. Monroe (1991, cited in Ravald & Grönroos, 1996, p. 20) had defined perceived value as the ratio of perceived benefits relative to perceived sacrifices. Ravald and Grönroos (1996, p. 26) explain that companies have largely focused on increasing perceived benefits and by adding features on an offering in order to add value. The term “add” value fosters this direction and gives the feeling that something has to be added, when it is not systematically the best way to provide superior value.

To sum up, we understand that value is a key concept that needs to be taken into consideration. This concept is complex and not absolute since it is a perception. At the same time, it is central in the sense that it is a way to reach customer satisfaction, something we understand as essential for a firm to be successful. After this presentation of the concept of value, it is essential to characterize it more precisely and see how it can be conceptualized.

### 3.1.2. How can we conceptualize value?

Walters and Lancaster (1999, p. 697) have defined customer value criteria, that is to say attributes or aspects of a product or service representing value for the customer during a purchase situation. They have identified six different criteria: security, convenience, performance, economy, aesthetics and reliability (Walters & Lancaster, 1999, p. 697). More recently, Smith and Colgate (2007) have elaborated a framework applicable to both consumer and business contexts, which is called the customer value creation framework. It identifies categories of value that enable the differentiation of offerings: the purpose here is not to identify all of the benefits and sacrifices that could be perceived by the customers (Smith & Colgate, 2007, p. 10).
This framework identifies four main kinds of value that can be created by firms: functional/instrumental value, experiential/hedonic value, symbolic/expressive value and cost/sacrifice value (Smith and Colgate, 2007). The framework also identifies five principal sources of value: information, products, interactions, environment, and ownership (Smith & Colgate, 2007, p. 10).

We can use the resultant (4 × 5) as a tool for characterizing a value creation strategy, enhancing product concept specifications, identifying value creation opportunities and developing measures of customer value (Smith & Colgate, 2007, p. 15-17).

Now that we have acquired a better understanding of the value concept and of what it is made up, the next step for us is to be more practical and to understand how companies can create and provide a high value to the customer?

3.1.3. How to provide value?

Anderson, Narus and Narayandas (2008) provide a process in their book “Business Market Management” indicating how to understand, create and deliver value to customers.

Value has been defined as the cornerstone of business market management, which is the process of understanding, creating and delivering value to targeted business markets and customers (Anderson, Narus and Narayandas, 2008, p. 3-34). Value is the expression in monetary terms of the economic, technical, service and social benefits a customer firms receives in exchange for the price it pays for a market offering (Anderson et al., 2008 p. 3-34). Having an accurate assessment of value provides a solid foundation for the firm’s efforts to create and deliver value to targeted market segments.

In order to understand value, market sensing is the first step to take: it is the process of generating knowledge about the marketplace that individuals in the firm use to inform and guide their decision making (Anderson et al., 2008, p. 43-47). It is made of four basic tasks: defining the market, monitoring competition, assessing customer value and gaining customer feedback (Anderson et al., 2008, p. 45-87). An accurate understanding of customer requirements, preferences, and purchasing processes is necessary for supplier managers to be able to maximize the allocation of their resources and capabilities (Anderson et al., 2008, p. 45-87). The second step to capture the sense of value is to understand firms as customers: learning how companies rely on a network of suppliers to add value to their offerings, integrate purchasing activities, and make purchase decisions (Anderson et al., 2008, p. 95-131). It is then necessary to craft a market strategy: crafting a market strategy consists in studying how to exploit a firm’s resources in order to achieve short-term and long-term marketplace success, deciding on a course of action to pursue, and flexibly updating it as learning occurs during implementation (Anderson et al., 2008, p. 135-173).

Creating value can then be realized through different actions: managing market offerings in order to create new market offerings and using the business channel management (Anderson et al., 2008, p.181-321).

Finally, a supplier has to deliver value to its customers: for that it is important to manage customers (Anderson et al., 2008, p. 410-457). Woodruff (1997, p. 143) explains that customer value learning is necessary for customer value delivery.
Overall, we see that the concept of value entails different tasks and visions that are truly market-oriented. Slater has developed a definition that illustrating this: “A customer value-based theory of the firm would say that superior performance accrues to firms that have a customer value-based organizational culture (market orientation), complemented by being skilled at learning about customers and their changing needs and at managing the innovation process, and that organize themselves around customer value delivery process” (Slater, 1997, p. 164).

From this quotation, we understand that market-orientation will play a major role in the process of increasing the value of a firm's offering. Market orientation and its consequences on the firm will be the next subject of literature research. It is important to notice that when Slater refers to “learning about customer and their changing needs”, he implicitly refers to intangible resources. He argues that “tangible resources play a less role in this theory of the firm” (Slater, 1997, p. 164). This implies that intangible resources, among which we can find knowledge, will be of a great importance. We will develop this further in the literature review, after the market-orientation review.

### 3.2 Market Orientation

#### 3.2.1 Reference to the “marketing concept”

According to Kohli and Jaworski (1990, p. 1), market orientation refers to the implementation of the marketing concept. Hence, it seems essential to understand the term marketing concept before further investigation.

Hooley, Lynch, and Shepherd (1990) tried to understand the meaning of the marketing concept for the practitioners. Their results suggest a natural progression of marketing development in companies “from sales support, through marketing development, to the adoption of marketing as a guiding philosophy for the whole organization” (Hooley et al., 1990, p. 21). They come to the conclusion that marketing is not only a departmental function but more a guiding philosophy in a company (Hooley et al., 1990, p. 21-22).

Turner and Spencer (1994) go even further in the definition of the marketing concept. They have first pointed out some characteristics of the marketing concept from the analysis of former definitions. They state that it is:

- A consumer orientation characterized by the skills to identify customers’ needs and wants and to satisfy them by creating and providing high value
- Supported by a wide corporate integrated effort of all departments in the company
- and a way to reach long-run corporate goals and objectives (Turner & Spencer, 1994, p. 111).

Then, they demonstrate how “the marketing concept defines a specific organizational culture as a shared set of beliefs and values centered around the importance of the customer in the organization’s strategy and operations” (Turner & Spencer, 1994, p. 118). Managers can use symbols to convey these values throughout the organization, but also to interpret it (Turner & Spencer, 1994, p. 118-119). According to their findings, the marketing concept becomes even more than a just guiding philosophy, and defines it as culture and therefore as the company itself: “the marketing concept is then
viewed as what the company is as opposed to something that the company has” (Turner & Spencer, 1994, p. 120).

3.2.2 Definitions of market orientation

Kohli and Jaworski (1990, p. 3) conclude from their literature review and field interviews that a market-oriented company is a company in which three main principles are applied operationally: customer focus, coordinate marketing and profitability. From this point, they provide a more advanced definition of a market orientation: “the organizationwide generation, dissemination, and responsiveness to market intelligence” (Kohli & Jaworski, 1990, p. 3):

- **Intelligence generation**: market intelligence is wider than just identifying the customers’ needs and preferences because first it also includes the anticipation of those needs and preferences. Then, it also entails the analysis of the exogenous factors impacting them. This intelligence can be generated by much more means than customer surveys, such as informal means and can imply gathering primary data or referring to secondary data. Finally, it is not only the responsibility of the marketing department (Kohli & Jaworski, 1990, p. 4).

- **Intelligence dissemination**: once market intelligence is acquired, it has to be spread and communicated throughout the organizations’ departments in order to elaborate a shared basis for concerted actions among the different departments (Kohli & Jaworski, 1990, p. 5).

- **Responsiveness**: after the market intelligence has been disseminated, the organization has to respond to market needs for instance throughout the targeted market selection or the new offering design (Kohli & Jaworski, 1990, p. 6).

In the light of Kohli and Jaworski’s contribution, we understand that market orientation requires first intelligent knowledge that becomes afterwards a resource: after that, the right behavior has to be adopted in order to achieve a market orientation. Kohli and Jaworski (1990, p. 15) have even stated by themselves that “a market orientation requires the commitment of resources”.

It is important to note that the term market orientation is more precise and adapted than marketing orientation: indeed, Shapiro (1988, cited in Kohli & Jaworski, 1990, p. 3) explained that the term marketing would emphasize too much the marketing department instead of shedding light on the market.

Narver and Slater (1990) have also largely contributed to the market orientation definition. From their literature review, they define market orientation as an organizational culture enabling to effectively and efficiently generate the appropriate behaviors for the creation of high value for customers and, consequently improving the performance of the organization (Narver & Slater, 1990, p. 21). They propose a model illustrating market orientation (see below figure 5), which relies on three behavioral components – customer orientation, competitor orientation, and interfunctional coordination- and two decision criteria – a long-term focus and a profit objective (Narver & Slater, 1990, p. 21).
They describe customer orientation as the “sufficient understanding of one’s target buyers to be able to create superior value for them continuously” (Narver & Slater, 1990, p. 21). According to Porter (1980, 1985 cited in Narver & Slater, 1990, p. 22), competitor orientation implies that the short-run strengths and weaknesses, and long-run capabilities and strategies of the current or potential competitors be understood by the seller. The third behavioral variable, interfunctional coordination refers to a coordinated use of organization resources so as to create a higher value to the target customers (Narver & Slater, 1990, p. 22). These three behavioral components of market orientation have to be considered in a long-term focus and with the objective to be profitable.

It is important to precise that Narver and Slater (1990) support the finding of Kohli and Jaworski (1990) exposed previously: the three behavioral components include the market intelligence generation, dissemination and the creation of an appropriate response to the market needs and preferences (Narver & Slater, 1990, p. 21). All of them see market orientation as a behavior.

### 3.2.3 Link with business performance

In addition, it is relevant to observe here that both the contributions of Narver & Slater (1990, p. 21) and Kohli and Jaworski (1990, p. 3) highlight the link between market orientation and business profitability. However, a slight different in these findings has to be stressed. Indeed, Kohli and Jaworski (1990) wrote: “our study suggests that though a market orientation is likely to be related to business performance in general under certain conditions, it may not be critical”. They give some examples of these ‘certain conditions”: steady market preferences or limited competition for instance (Kohli & Jaworski, 1990, p. 15).
Deshpandé, Farley, and Webster (1993, p. 23-24) have investigated the relationships between corporate culture, customer orientation, innovativeness, and business performance. According to their results, firms with more responsive and flexible cultures perform better than the firms with more consensual and internally oriented cultures (Deshpandé, Farley, and Webster, 1993, p. 31). Afterwards, they also explain that customer orientation and innovation are two key determinants for business performance (Deshpandé et al., 1993, p. 31). Another important finding of their studies is that the perception of the market-orientation degree of an organization can be different from the organization’s point of view and from the customer’s point of view (Deshpandé et al., 1993, p. 32). Nevertheless, the main limit to the generalization of this study is that it was conducted in Japanese firms.

We will go back to business performance when we will address the recent trend.

3.2.4 How to concretely adopt a market orientation?

Day goes further in the market-orientation research when he explains that not so many researches have been conducted to identify how to implement a successful market orientation: hence, he explores the role of capabilities in the creation of a market-oriented organization (Day, 1994, p. 37). He defines capabilities as a “complex bundles of skills and collective learning, exercised through organizational processes that ensure superior coordination of functional activities” (Day, 1994, p. 38). He agrees with the previous literature since he highlights the roles of culture, information use and interfunctional coordination in a market-oriented company. Yet, he explains that this definition is not enough since it does not detail how superior skills have to be developed in order to achieve a market orientation (Day, 1994, p. 49). He argues that two main capabilities are essential for the creation of a market orientation: market sensing capability and customer-linking capability (skills, capabilities, and processes necessary to create collaborative customer relationships and discover customer preferences easily) (Day, 1994, p. 49). He also proposes a change program that companies can adopt to be more market-driven:

- Diagnosis of current capabilities
- Anticipation of future needs for capabilities
- Bottom-up redesign of teams responsible for improvement of implicit processes
- Top-down direction from senior managers involvement in prioritizing the customer
- Use of information technology

Anderson, Narus and Narayandas (2008, p. 263) explain that firms on business markets should really try to be market oriented and customer focused: indeed, it enables to increase the speed-to-market, to decrease the realization costs and to be more successful on the market place. They first write that firms should have a market-oriented research and it is the role of the management to decide on which areas and technology the firm will concentrate (Anderson et al., 2008, p. 263). In order to achieve this, firms should create focused research centers and connect research with the market thanks to interactions between research scientists, marketers and field engineers. It will make the firm aware of the changes in the customers’ preferences and in the competitors’ offerings (Anderson et al., 2008, p. 263).
They also advice companies to be market-oriented in their development (Anderson et al., 2008, p. 266) by:

- Providing a positioning statement at all the stages (target, offering concept and value proposition) (Anderson et al., 2008, p. 267)
- Researching market requirement and translating them into design specifications (Anderson et al., 2008, p. 267)
- Using the customer value assessment to guide the realization efforts (Anderson et al., 2008, p. 270)
- Tailoring the market introduction of new offerings (Anderson et al., 2008, p. 270).

This previous approach of market-orientation is practical and more recent. After the review of the past literature (80’s-90’s), we have the feeling that the marketing concept at this time was understood as the market orientation of today. For us, there is a differentiation to make: having a marketing approach does not mean that the firm is market oriented. Market oriented implies a lot more and we can observe that in the recent trend.

**3.2.5 The recent trend**

Kumar, Jones, Venkatesan, and Leone (2011) have conducted a research in 261 firms over 9 years (from 1997 to 2005) in order to investigate the link between market-orientation and business performance in the long-run. They found out that market orientation has a positive effect on sales and profit in the short and the long-term: more precisely it has more effect on profit than sales both on the short and the long-term (Kumar, Jones, Venkatesan, and Leone, 2011, p. 28). Their results also show that competitive intensity is a moderator in the relationship market orientation / business performance and that a competitive advantage coming form market orientation is better for the early adopters in the industry (Kumar et al., 2011, p. 27).

On the whole, they have observed that more and more companies have adopted a market orientation over the past fifteen years (Kumar et al., 2011, p. 27). Market orientation has become a kind of basic and companies have to continue going further in this reasoning: “Indeed, it [market orientation] is the cost of doing business rather than a distinct characteristic and a specific source of SCA. Companies must continue to raise the bar and not just maintain a certain level of market orientation to be successful; that is, to have a unique advantage, companies must continuously identify new dimensions of this construct to distinguish themselves.” (Kumar et al., 2011, p. 28)

Hence, they conclude that market orientation has a decreasing effect on business performance but has become “the cost of competing”; it is now a kind of basic necessarily adopted that should be viewed as a resource to sail through tough time (Kumar et al., 2011, p. 28).

We have seen in this part that the external orientation of the firm has evolved during the last twenty years. We will now pursue our chronological review with the development of the resource-based view and the dynamic capabilities view of the firm. Then we will present the extension of these two views: knowledge management.
3.3 The Resource-Based View (RBV) and the Dynamic-Capabilities View (DCV)

The RBV and DCV have both received a lot of attention during the past twenty years and have strongly impacted the way we see the firm. At the beginning of the RBV, we can notice that already two schools of thought emerged: one emphasizing value appropriation and capture, and another focusing on innovation and resource-value creation (Teece, Katkalo & Pitelis, 2010). While the RBV rather has a static view of the resources, the DCV considers the resources as being dynamic assets and is the origin of knowledge management theories. The RBV can be assimilated to a positivist approach of the reality, whereas the DCV rather follow an interpretivist view of the reality, which is also our case. We decided to present the DCV and the RBV in our literature review because we think that it is important to demonstrate how positivism differs from interpretivism. It was also an excellent way for us to strengthen our choice of adopting an interpretivism approach.

Teece et al. (2010, p. 1176) propose several definitions of key terms that we will use for our literature review. These authors define resources as stocks, not flows that are idiosyncratic in nature and that cannot be trade due to their intangibility. The value of resources is context dependent, which makes their transfer among firms difficult (Teece et al., 2010, p. 1176). Teece et al. (2010, p. 1177) argue that “competences are a particular kind of organizational resource (…) resulting from activities that are performed repetitively, or quasi-repetitively”. On the other side, Teece (1997, p. 511) stated that “dynamic capabilities are the firm’s capacities to integrate, build, and reconfigure internal and external resources/competences to address and shape rapidly changing business environments”.

We will also find this difference of thought in the knowledge management literature. Some researchers indeed consider that the primary task of the organization is to acquire/capture knowledge (Grant, 1996), hence acquiring/capturing the value, and others see knowledge like a dynamic asset and emphasize the need to create them, hence creating the value (Nonaka, 1994).

3.3.1 The origin of the RBV

We can notice that already in 1959, Penrose had pointed out the importance for managers to carefully consider the resources they have at their disposal (1959, cited in Lockett, Thompson, Morgenstern, 2009). Using her research, we can highlight three central elements of resources: the functionality, the combinations or recombinations, and the creation of resources. Penrose considers that managers are able to take advantage of an opportunity only when they can see the functionality of the resources they have (Penrose, 1959 cited in Lockett et al., 2009, p. 13). It means that managers have to make research about their own resources, discover the functions they can have and use them in relation to the market opportunities. Penrose also argue that a resource should not be seen as an isolate asset but rather consider combination and recombination of resources (1959, cited in Lockett et al., 2009, p. 13). The growth of the firm implies an adaptation to new market opportunities, which will require new combinations or recombination of resources. Beyond combinations and recombinations, Penrose explains the possibility for the firm to grow through the creation of new resources: the excess of new resources will be the basis of an organization’s growth.
(1959 in Lockett et al., 2009, p. 15). Her work has served as a basis for further central researches on the RBV (Wernerfelt, 1984; Barney, 1991).

3.3.2 The development of the RBV

It is essentially after the article written in 1984 by Wernerfelt that a theory on a firm’s resources has been developed (Wernerfelt, 1984). The RBV considers the firm as an entity consisting of bundles of resources. Wernerfelt (1984, p. 173) argues that it is through the development of resources, their natures and the different techniques used to employ them that companies can increase their profitability. In order to understand the link between the management of resources with competitive advantages, we first need to define both terms. Barney considers that “firms resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness” (Barney, 1991, p. 101). This definition is broad and in order to help us in understanding how resources can contribute to a firm performance, we can classify them into four main categories (Flamholtz, 2002, p. 74): financial, physical, technological and human resources. According to Barney, “a firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors” and this advantage becomes sustainable “when other firms are unable to duplicate the benefits of the value creating strategy” (Barney, 1991, p. 102). If a firm acquires and develops strategic resources, then its performance is expected to be strong (Wernerfelt, 1984, p. 175).

Barney has developed a model in which he presents the four attributes a firm’s resources should have to lead to a sustained competitive advantage (Barney, 1991, p. 105):

- A resource has to be **valuable**, which means that it should enable the firm to exploit opportunities and respond successfully to the threats.
- A resource must be **rare**: competitors should not also possess it and the resource should improve the market position of the firm having it.
- A resource must be **imperfectly imitable**: another firm should not be able to replicate it and use it as good as the firm possessing it does.
- A resource must **not have substitutes** that are equally strategically equivalent, valuable, rare and imperfectly imitable.

![Figure 6. The resources model
Source: Barney, 1991, p. 114](image)
Barney therefore considers that firm’s resources are different from one firm to another and that they are cannot be easily transferred. The difference between firms in terms of performance stems from that difference in resources. What’s more, in order to develop a sustained competitive advantage, a firm’s resources have to be valuable, rare, inimitable and not substitutable (Barney, 1991, p. 105). Wade and Hulland agree with Barney’s model and use it to show the relation between the attributes of the resources and the sustainability of a competitive advantage (Wade & Hulland, 2004, p. 119). They state that the valuable, rare and appropriable character of a resource will generate a competitive advantage if the resource is used productively by the firm (Wade & Hulland, 2004, p. 120). This will lead to a short-term competitive advantage that can be transformed into a sustained competitive advantage only if the resource has: a low substitutability, a low mobility and a low imitability (Wade & Hulland, p. 120). We present the model below that also shows the relations between substitutability and value, between mobility and rarity, and between imitability and rarity.

Looking at the organizational aspect of managing resources, Prahalad and Hamel argue that the senior management of a firm has to develop a “strategic architecture” that establishes the company’s aim in terms of competence building (Prahalad & Hamel, 1990, p. 89). Their central argument is that a firm cannot preserve its competitiveness if it had not previously identified the core competencies to possess and develop a strategic architecture that protects and improves the firm’s central competencies (Prahalad & Hamel, 1990, p. 91). Making the objectives transparent to the entire organization and being “consistent in resource allocation” will also contribute to creating a “managerial culture, teamwork, a capacity to change, and a willingness to share resources, to protect proprietary skills, and to think long term” (Prahalad & Hamel, 1990, p. 89). Like Penrose did in 1959, we can notice the emphasis made by Prahalad and Hamel on the role of managers when it comes to identifying the functionality of the different resources the firm possesses and to deciding which resources to develop and to combine (Penrose, 1959 cited in Lockett et al., 2009; Prahalad & Hamel, 1990).

### 3.3.3 The Dynamic Capabilities View (DCV) of the firm

The Dynamic Capabilities View of the firm has emerged almost at the same time that the RBV, and attests somehow the evolution of thoughts in the 90s. We can notice that these two views can complement each other and can be interrelated. Indeed, both...
resources and dynamic capabilities have to build by the firm, they cannot be bought. The main difference is that resources are used in order to perform what the firm is currently trying to achieve, whereas dynamic capabilities enable the firm to adapt to its market and match the opportunities (Teece et al., 2010, p. 1178). Teece (1997) stated that the firm has to develop, improve and create new capacities in order to respond to an increasingly changing marketplace. Hence, the dynamic capabilities “enable the enterprise to profitably orchestrate its resources, competences, and other assets” (Teece et al., 2010, p. 1178). The increasingly changing customers’ requirements and preferences has led companies to design new combinations of various elements of their value chain in order to propose solutions that bring value to their customers (Teece et al., 2010, p. 1178). The DCV is related to the knowledge management approach of Nonaka (1994), which is important for our research. We will present Nonaka’s approach with more details in the next part of our literature review.

3.3.4 From the RBV and DCV to the knowledge-based view of the firm

We can consider that the knowledge-based view is an extension of the RBV and DCV, with a focus on the human character of resources. The knowledge-based view for example integrates the dynamic character of resources and the issues related to their appropriability, integration, coordination and creation within a company (Nonaka, 1994; Grant, 1996). The development of the knowledge-based theory is mainly due to a search for greater performance, which makes the creation, the sharing, the application and the acquisition of knowledge central in today organization (Kakabadse, Kouzmin & Kakabadse, 2001, p. 143). As a consequence, we have access to a large amount of literature about knowledge management that we will review in the next part.

3.4 Knowledge management and the role of knowledge in the firm

Peter Drucker considers knowledge as the main resource a company possesses to gain sustainable competitive advantages that will enhance its business performance “The next society will be a knowledge society. Knowledge will be its key resource, and knowledge workers will be the dominant group in its workforce” (Drucker, 2001). Knowledge has emerged as a very strategic asset for organization and can lead to competitive advantages. (Kakabadse et al., 2001, p. 140). With the aim to understand how knowledge can be managed within organizations, authors such as Grant, Nonaka or Spender have developed their respective theory on knowledge-management (Grant, 1996; Nonaka, 1994; Spender, 1996).

Knowledge-management has contributed to the emergence of a new vision of the firm based on the principle that the strategy of the firm should rely on its capacity to generate, integrate, coordinate and exploit knowledge (Kogut & Zander, 1996, p. 505). This capacity of managing knowledge as described by Kogut and Zander has been developed through two complementary approaches. On the one hand, Grant considers that the main objective of knowledge management is to integrate and coordinate knowledge within an organization (Grant, 1996, p. 109), whereas on the other hand, Spender and Nonaka rather see the firm as being a place where knowledge is created (Spender, 1996; Nonaka, 1996). We can notice that the research of Grant has served as a starting point for future researches with the identification of two fundamental questions: What is knowledge? What characteristics of knowledge will influence the way it will be managed? (Grant, 1996, p. 110). We will first try to bring a better understanding of
what knowledge is, and then present the two main approaches mentioned earlier and study their synergy potential. Finally, we will show what the challenges of knowledge management are and the related implications on the company’s performance.

3.4.1 What is knowledge?

As Grant recognized it in his first major research about knowledge management, it is very difficult and risky to formulate a precise definition of knowledge (Grant, 1996, p. 110). Knowledge is what people know and is therefore tough to define. Plato, Aristotle, Locke, Kant, Descartes are famous philosophers who have tried to define the notion of knowledge (Grant, 1996, p. 110). We can assume that there is not one single correct definition of knowledge, but rather different useful definitions for our understanding. We present below a list of definitions of knowledge gathered by Kakabadse, Kouzmin and Kakabadse (Kakabadse et al., 2001, p. 141), which are central for our understanding of what knowledge management really is.

Table 3. Definitions of knowledge

<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sowa</td>
<td>1984</td>
<td>Knowledge encompasses the implicit and explicit restrictions placed upon objects (entities), operation and relationships along with general and specific heuristics and inference procedures involved in the situation being modeled</td>
</tr>
<tr>
<td>Turban</td>
<td>1992</td>
<td>Knowledge is information that has been organized and analyzed to make it understandable and applicable to problem solving or decision making</td>
</tr>
<tr>
<td>Beckman</td>
<td>1997</td>
<td>Knowledge is reasoning about information to actively guide task execution, problem-solving and decision making in order to perform, learn and teach</td>
</tr>
<tr>
<td>Van der Spek and Spijkervet</td>
<td>1997</td>
<td>Knowledge is the whole set of insights, experiences and procedures which are considered correct and true and which, therefore, guide the thoughts, behaviors and communication of people</td>
</tr>
</tbody>
</table>

We can notice that while Beckham and Turban see knowledge as mainly being information that has been transformed in order to help the decision maker, Sowa, Van der Spek and Spijkervet have a broader view of knowledge. A common point among these definitions is that knowledge is involved is the decision making process, which is certainly why more and more researchers emphasize the growing strategic role of knowledge management. Managing data and information is at the heart of knowledge management, but we also need to consider the processes and human behaviors necessary to first transform information into knowledge and thereafter to create and share it within the organization (Kakabadse et al. 2001, p.146). It seems clear that reaching a common consensus on what is knowledge is hard to achieve. As a consequence different models of knowledge management have emerged among business and academia.

3.4.2 Different models of knowledge management (KM)

The three authors lately mentioned have synthesized the different views of knowledge management into three main categories in the table 3 that we present below. We will relate the cognitive and network models with the works of Grant, and Zander and
Kogut, who focus on the role of acquiring and coordinating knowledge within the firm (Grant, 1996; Kogut & Zander, 1996). Thereafter we will link the community model with the researches of Nonaka who promote the resource-creating view of the organization (Nonaka, 1994).

Table 4. Models of Knowledge Management

<table>
<thead>
<tr>
<th>Source: Kakabadse et al. 2001, p. 142.</th>
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</thead>
<tbody>
<tr>
<td><strong>Models of Knowledge Management</strong></td>
</tr>
<tr>
<td><strong>Cognitive model of KM</strong></td>
</tr>
<tr>
<td><strong>Network model of KM</strong></td>
</tr>
<tr>
<td><strong>Community model of KM</strong></td>
</tr>
<tr>
<td><strong>Treatment of knowledge</strong></td>
</tr>
<tr>
<td>Knowledge is objectively defined and codified as concepts and facts</td>
</tr>
<tr>
<td><strong>Dominant metaphor</strong></td>
</tr>
<tr>
<td>Memory</td>
</tr>
<tr>
<td>Network</td>
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<tr>
<td>Community</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
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<tr>
<td>Knowledge capture and storage</td>
</tr>
<tr>
<td>Knowledge acquisition</td>
</tr>
<tr>
<td>Knowledge creation and application</td>
</tr>
<tr>
<td><strong>Primary aim</strong></td>
</tr>
<tr>
<td>Codification and capture explicit knowledge and information</td>
</tr>
<tr>
<td><strong>Critical lever</strong></td>
</tr>
<tr>
<td>Technology</td>
</tr>
<tr>
<td>Boundary spanning</td>
</tr>
<tr>
<td>Commitment and trust</td>
</tr>
<tr>
<td><strong>Primary outcomes</strong></td>
</tr>
<tr>
<td>Standardization and re-cycling of knowledge</td>
</tr>
</tbody>
</table>

3.1.2.1 Acquisition and coordination of knowledge inside organizations

Grant considers that „the critical input in production and primary source of value is knowledge” and that “the fundamental task of organizations is to coordinate the efforts of many (knowledge) specialists” (Grant, 1996, p. 113). Therefore, it is important that people inside organizations become specialists in their own field by acquiring knowledge and that the firm favors the coordination of the acquired knowledge. This view is shared by Kogut and Zander who state that companies are above all organizational structures that ease the transfer and communication of new knowledge (Kogut & Zander, 1996, p.508). Following this view, knowledge is created by the individuals themselves and the role of the firm is not to create knowledge but to integrate and coordinate it once people within the organization have created and acquired it. According to Grant, the utilization of knowledge to create value is pertinent when it answers to the following characteristics: transferability, capacity for aggregation and appropriability (Grant, 1996, p.111). It means that knowledge should be easily transferable within the firm, which encompasses its capacity to be transmitted and to be appropriated by the receiver.

Using the existing literature in 1996 on explicit and implicit coordination mechanisms, Grant (1996, p. 114 & 115) relates it to the characteristics of knowledge in order to point out four important mechanisms used to integrate specialized knowledge. First, rules and directive are used to regulate interpersonal relations and to favor the knowledge flow. Second, sequencing of the knowledge coordination helps to communicate knowledge through time sequences. Third, routines are interesting when it comes to coordinate knowledge involving complex interactions. Fourth, group solving and decision making enable a cost-efficient communication between people involved in process. In addition to these mechanisms, Grant mentions the necessity to have common knowledge among the people involved in the mechanisms: “the intersection of their
individual knowledge set” (Grant, 1996, p. 115). Mastering knowledge coordination mechanisms is important for any organization as it will directly influence its capacity to create value and to develop competitive advantages. Indeed, the combination of knowledge enables to create capabilities that are hard to imitate, contributing to the longevity of the competitive advantage (Grant, 1996, p. 117).

3.1.2.2 Creation of knowledge inside organizations

The resource-creating view, presented by Nonaka (1994) sheds light on how the firm has to favor the creation of knowledge within the organization. The major role of the firm is therefore not to enable the coordination of knowledge (Grant, 1996) but to foster its creation (Nonaka, 1994). These two views have to be seen as complementary, since an organization that aims at developing an efficient knowledge management will have to support both the integration/coordination and the creation of knowledge. Spender considers also that the knowledge-based theory of the firm “is a platform for a new view of the firm as a dynamic, evolving, quasi-autonomous system of knowledge production and application” (Spender, 1996, p. 59).

Before presenting the resource-creating view of Nonaka, we need to go back to the definition of knowledge with the introduction of two new dimensions: tacit and explicit knowledge. Tacit knowledge is knowledge that is not formalized or made explicit, and explicit knowledge is codified knowledge that is transmittable through the use of a language. According to Nonaka (Nonaka, Toyoma & Byosière, 1998, p. 494), tacit knowledge gathers:
- The knowledge of experience, expressed by the body when someone does a task.
- Simultaneous knowledge, expressed at a precise place and moment.
- Analog knowledge, expressed through practice.

Explicit knowledge is also of three kinds:
- Knowledge of rationality, which is in people’s mind.
- Sequential knowledge.
- Digital knowledge, expressed through theory.

Tacit and explicit knowledge will be created through interactions of different levels: individual level, group level, organization level and inter-organizations level. Nonaka call the interaction between tacit and explicit knowledge “knowledge conversion”, which is of four types: socialization, externalization, combination and internalization (Nonaka et al., 1998, p. 495). These four modes of knowledge conversion will enable an organization to integrate the created knowledge.

Socialization will take place when there is a need to bring together tacit knowledge and to express them through a joint activity. Having the same experience will enable the acquisition of knowledge among the members of the activity. Externalization is “the key to knowledge creation because it creates new, explicit concepts from tacit knowledge” (Nonaka et al., 1998, p. 495). It will depend on the capacity of the person possessing the tacit knowledge to express it explicitly through the use of metaphors, analogies and models. Combination consists in connecting precise elements of explicit knowledge into other explicit knowledge that is more complex. It is achieved by the use of media like online communication networks, meetings or documents. Internalization is made to create shared mental models within an organization from explicit to tacit knowledge. These four modes of knowledge conversion are summed up in figure 8.
We will now describe the process of knowledge creation developed by Nonaka. Knowledge can be created only if some fundamental enabling conditions are fulfilled. First, the organization should provide a favorable system with the following elements: chaos, redundancy and required variety (Nonaka et al., 1998, p. 509). Once the firm has fulfilled its role, the creation and sharing of knowledge will mainly depend on the commitment of the individuals. It will be impacted by people’s intention to acquire new knowledge and to share it, their autonomy and the fluctuation inside their environment (Nonaka et al., 1998, p. 510). The five steps of the knowledge creation process are represented in the figure 9. Once the enabling conditions for the creation of knowledge have been gathered, the creation process will first start with the project members developing knowledge based on their own experience. This step relies mainly on the commitment of the people involved. The second step is about sharing the tacit knowledge among the different members, which has to be encouraged by the organization. Conceptualization will then help to transform the tacit knowledge into explicit knowledge through interactions and crystallization to express concretely the created knowledge. Justification is about evaluating the quality of the created knowledge thanks to the use of criteria, which will justify the incorporation of the knowledge inside the knowledge-base of the organization (Nonaka, 1994, p. 27).

To conclude with the two different approaches on the main roles of the firm in the context of knowledge management, we can assume that leading firms are able to combine both the role of integrating and coordinating the knowledge flow within the
organization (Grant, 1996) and the role of favoring the creation of knowledge at the individual and collective levels (Nonaka, 1994; Spender, 1996).

3.4.3 The challenges of knowledge management (KM)

Looking at knowledge management in practice, we have used a Cranfield survey (TCISKS, 1998 in Kakabadse et al., 2001, p. 148) carried out in different countries that points out the main barriers to an efficient knowledge management. There are four main barriers to knowledge management that we have summarized in figure 10. We assume that the different factors mentioned in the survey are somehow inter-related and will influence each-other. For example, a constant staff turnover will make difficult the understanding of knowledge management inside an organization.

![Knowledge Management Challenges Diagram](image)

To conclude on our review of the knowledge management literature, we can highlight the role of the senior management in shaping the firm’s orientation. Its impact on how the firm evolves is noteworthy and it will also influence how the firm builds relationship with its external environment. In the next session we will see that firms are more and more oriented towards their customers, which has led to the development of the customer relationship management.

3.5 Customer orientation and the development of CRM capabilities

We pursue our literature review with the evolution of the firm’s orientation towards customers, which has lead many companies to develop and implement Customer Relationship Management (CRM) systems. Looking at the structure of our literature review, we assumed that it was important to first introduce the different approaches of knowledge management and then to describe the evolution in the orientation of companies. We indeed claimed at the beginning of the literature review that we would proceed chronologically. The literature reviewed on customer orientation and CRM for example uses the contribution of researchers on knowledge management. According to Nakata and Zhu (2006, p. 322), customer orientation can be seen as a strategic
capability, as it combines different resources and lead to superior performance. They demonstrate in a research on the link between information technology and customer orientation that it is through the combination of human resources, organizational resources and technological resources that firms will succeed in being customer oriented (Nakata & Zhu 2006, p. 323). We also assume that being customer oriented is a strategic capability, as it is “a complex bundle of skills and accumulated knowledge, exercised through organizational processes that enable firms to coordinate activities and make use of their assets” (Day, 1994, p. 38). George Day is a major author in the field of customer relationship management and one of the first to assume that building strong relationships with customer will enable the firm to better understand their evolving requirements and to provide them with a greater value (Day, 1994). The evolution of the firm’s orientation also attests the development of relationship marketing, contrasting with transaction marketing, which aims at managing and controlling the relationships the firm has with its prospective or existing customers (Gebert, Geib, Kolbe & Brenner 2003, p. 114). Using the above mentioned researches as a guideline, we will first investigate the technological, organizational and managerial implications for the firm to be customer-oriented. Then, we will describe the purposes and objectives of building superior CRM capabilities, and see the different possibilities for CRM systems.

3.5.1 Implications of the customer orientation

Firms that have shifted from a market-orientation towards a customer-orientation are those that are getting closer to their customers with the aim to better understand their requirements and preferences (Day, 1994, p. 40). However, adapting the orientation of a firm is a long process and managers who want to make their company customer-driven have to be prepared for a long and arduous journey (Gulati & Oldroyd, 2005, p. 92). Gulati and Oldroyd (2005, p. 97) have realized an in-depth study of 17 customer-driven companies during two years and have designed a four-phase process for firms to become customer-oriented. They agree with Day (2002, p. 14) who states that for a company to be successful in implementing a CRM system, it needs first to make the entire organization customer-oriented, which takes quite a long time. We will now describe the four stages of the customer-orientation process, which takes the common practice of the companies studied by Gulati and Oldroyd (2005, p. 95).

The first stage, called communal coordination, refers to the creation a repository of information and knowledge related to the customer, which has to be central in the firm. This pool of information needs to be organized according to the category of customer and not by product, technology or location. Once it is done, the critical task for the company will be to coordinate the information and knowledge between the different units, which involves convincing everyone to participate actively in the repository development (Gulati & Oldroyd, 2005, p. 95). We can therefore assume that a firm having a knowledge management system oriented towards the coordination of knowledge (Grant, 1996) has a strong advantage compared its competitors. The second stage of the process focuses on the serial coordination of past information and knowledge. It goes further than the first stage in the sense that the information is analyzed, not just transcribed, by the different units of the organization. The analyses also have to be coordinated within the company and should not stay only into the hand of the person who performed the analysis. The senior management thus has to encourage employees to share (Gulati & Oldroyd, 2005, p. 96). The third step is characterized by the interpretation of the analyzed information in order to anticipate and
even shape the future. It is called the *symbiotic coordination*. Customer-oriented companies do it in order to foresee future customer behaviors and to plan actions in relation to their interpretation (Gulati & Oldroyd, 2005, p. 98). Last but not least, firms achieving the integral coordination of customer information and knowledge are those who succeed in integrating what they have learned into their day-to-day activities (Gulati & Oldroyd, 2005, p. 100). This process is simple to understand but it takes a long time before everybody in the firm really get involves in it, which makes the potential of being customer-oriented long to exploit.

When on one side the firm has reached a satisfying level in making the organization and people ready to pursue a customer-orientation, Nakata and Zhu argue that it is also crucial for the firm to simultaneously foster the development of technological capabilities (Nakata & Zhu 2006, p. 323). They state that customer orientation is “the ability to create and deliver superior customer value through the processing of market intelligence and coordinating of organization-wide responses based on that intelligence” (Nakata & Zhu 2006, p. 324). Therefore, they agree with the conclusions of Gulati and Oldroyd (2005) and sheds light on the necessity to develop IT capacities that will enable the creation of strong CRM capabilities. This view is also shared by Day: “more important is knowing how to acquire, select and interpret information so it becomes useable knowledge, and then creating an environment, which increases the willingness of individuals to freely share their specialized knowledge” (Day, 2000, p .12).

### 3.5.2 The development of CRM capabilities

Developing a superior CRM capability is expected to become one of the most important sources for the improvement of the business performance (Day, 2002, p. 2), especially by achieving a relationship advantage (Day, 2000, p. 11). The purpose of CRM is to achieve the “optimum balance between corporate investment and the satisfaction of customer needs to generate the maximum profit” (Gebert et al., p. 110). The central objective of CRM is to support business activities through the allocation of resources in order to gain competitive advantages (Gebert et al., 2003, p. 107). It is considered as a strategic capability by Day (1994, p. 44), as it rests on a long process involving the complex combination of a firm’s supporting resources.

According to Gebert et al. (2003, p. 108), building CRM systems indeed involves the following activities: measuring the input and output of a firm function in terms of revenue, profit and value, updating the knowledge continuously acquired by the firm about its customer needs, behaviors and motivations, using this knowledge in order to improve the firm performance, orienting the different departments towards a common goal, implementing a technological system to support the acquisition of knowledge, and balancing the inputs of the different departments into the system (Gebert et al., 2003, p. 108). In addition, they consider that CRM processes are “knowledge-oriented processes” and point out three main knowledge flows (Gebert et al., 2003, p. 109): *about* customers (used to understand customers’ motivation), *for* customers (customers’ needs in terms of knowledge), and *from* customers.

We will focus our research on the third type of customer knowledge, knowledge from customers, which has received little attention in the research academy (Garcia-Murillo & Hannabi, 2002, p. 875). Therefore, when we will mention the term customer knowledge management, we will refer to knowledge that customers possess and not knowledge that the firm have on customers.
3.6 Customer Knowledge Management (CKM)

After our literature review on the evolution of the view of the firm and the shift in the firm’s orientation, we are able to affirm that CKM stems from the development of knowledge management practices and the increasing number of customer-oriented companies. CKM is even sometimes considered as being the perfect mix between CRM and KM, enhancing the benefits and reducing the risks of both practices (Gebert et al., 2003, p. 107). Whereas these authors consider that CKM involves the management of three kinds of customer knowledge: for, about and from the customer, other scholars refer to CKM as being the exclusive management of knowledge from customers (Garcia-Murillo & Hannabi, 2003; Gibbert, Leitbold & Probst, 2002). As we said earlier, we will focus our research on knowledge from customers. It is a field of study that has been rarely investigated (Garcia-Murillo & Hannabi, 2003, p. 875) and which is of great interest for companies seeking to build strong relationships with their customers (Prahalad & Ramaswamy, 2000, p. 81). In this section we will first introduce the concept of customer knowledge management and differentiate it from CRM and KM. Thereafter, we will study the hurdles of CKM and how to overcome them through the motivation of customers. In the last section of our literature review we will detail the five best practices that dedicated to the acquisition of knowledge from customers.

3.6.1 What is Customer Knowledge Management?

The knowledge that a firm possesses can stem from and be about various sources: employees, suppliers, products, competitors, etc. The figure 11 illustrates the different components of a firm knowledge.

![Figure 11. The firm knowledge](source: Garcia-Murillo & Hannabi, 2003, p. 876)

Among the different sources of knowledge, researchers have pointed out that the customer has been poorly considered (Garcia-Murillo & Hannabi, 2003, Prahalad & Ramaswamy, 2000). However, the dynamic change of the marketplace has forced companies to reconsider the role of the customer and make him evolving towards a source of competence for the organization (Gibbert et al., 2002, p. 1). Customers are “a
new source of competence for the corporation” and that competence “is a function of the knowledge and skills they possess, their willingness to learn and experiment, and their ability to engage in an active dialogue” (Prahalad & Ramaswamy, 2000, p. 80). Indeed, customers possess knowledge about the products, the suppliers and the market, which are developed through the utilization of a product. This knowledge is valuable for the firm and has to be integrated into the knowledge base of the firm (Gebert et al., 2003, p.115). Gibbert et al. have studied during six years more than 25 companies, and have found that “smart companies are prolific customer knowledge managers” and that “by managing the knowledge of their customers, corporations are more likely to sense emerging market opportunities before their competitors (...) and to more rapidly create economic value for the corporation and its customers” (Gibbert et al., 2002, p .2). In addition, it is a very good way to get a rich content from interactions with customers and can make the firm better understand the behavior of its customers (Garcia-Murillo & Hannabi, 2003, p.875). Therefore, enterprises will have to go further beyond what they are doing in terms of developing relationships with their customers. Companies have to “understand the purpose, the meaning, and quality of the dialogue from the customer’s perspective and to find ways to process what they learn from customers so they can bring the dialogue forward and keep the customer’s interest” (Prahalad & Ramaswamy, 2000, p. 83). The contributions of the authors we have mentioned until now clearly shows that CKM is different from KM and from CRM. The table 4 points out the main differences between the three concepts.

Table 5. The differences between CRM, KM and CKM

<table>
<thead>
<tr>
<th>Source: Gibbert et al., 2002, p. 3</th>
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<tbody>
<tr>
<td><strong>Knowledge sought in</strong></td>
</tr>
<tr>
<td>Anxins</td>
</tr>
<tr>
<td>Objectives</td>
</tr>
<tr>
<td>Role of customer</td>
</tr>
<tr>
<td>Recipient of Incentives</td>
</tr>
<tr>
<td>Corporate role</td>
</tr>
<tr>
<td>Business objectives</td>
</tr>
<tr>
<td>Conceptual base</td>
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<tr>
<td>Business metrics</td>
</tr>
</tbody>
</table>

This table clearly shows that CRM, KM and CKM differ in terms of objectives, role of the customer and recipient of incentives for example. The firm will have to make the customer be active, for him to become a knowledge partner. Gibber et al. provide us with a definition of CKM that we take for reference in our study: “CKM is the strategic process by which cutting edge companies emancipate their customers from passive recipients of products and services, to empowerment as knowledge partners. CKM is
about gaining, sharing, and expanding the knowledge residing in customers, to both
customer and corporate benefit” (Gibbert et al., 2002, p. 2). We can therefore consider
CKM as strategic for the firm. Yet, very few companies are using it intentionally, which
leads us to study the limitations of CKM and to determine why customers would like to
share what they know with the firm.

3.6.2 Why should customers share?

This is indeed the question that we might face when presenting the different methods of
CKM to a business manager. In order to answer this question, we will first present the
main hurdles to overcome when deciding to use the knowledge from customers and then
see how firms can leverage the motivation factors of their customers in order to reach
their objective.

George S. Day (2000, p. 1) states that there are three main obstacles for firms willing to
develop their relationships with their customers. First, it is not always possible for firms
to deepen their relation with their customers, which sometimes depends on the market
and on the type of relation in an industry. Day argues that customers generally accept to
be more collaborative only if they see a benefit in it. Second, being active in a
marketplace means to face the countervailing actions of a firm’s competitors that will
try to undercut the relationships between the firm and its customers (Day, 2000, p. 2).
Third, developing collaborative and continue relationships with customers involves very
good organizational skills. Customers are looking for personalized experiences, which
require the firms to mobilize its resources according to its customer’s needs in terms of
relationship (Prahalad & Ramaswamy, 2000, p. 84). These are the three main hurdles
that companies will have to face when developing their relation with their customers.
Firms will be able to overcome them through the understanding of the customer’s
motivations.

We can wonder what the interest of the customer to share his knowledge is. The
research about the motivation to share has been mostly made in the field of online
communities. It is very common, especially for software companies, to use the
knowledge from customers online. Hars and Ou (2001, p. 5) have studied the
motivations in open source projects, including both open source communities and
specific open source project programmers’ forums. They have identified two kinds of
motivation: internal factors (intrinsic motivation, altruism, and community
identification) and external rewards (future returns and personal needs) (Hars & Ou,
2001, p. 1-4). Their results show that external factors have the most important weight
(Hars & Ou, 2001, p. 7). They also show that different groups of developers participate
in these open source projects: “hobbyists and students” are more internally motivated
than “salaried and contract programmers” who try more to sell related products and
services (Hars & Ou, 2001, p. 7). In addition, a large amount of developers are paid for
their participation in these projects (Hars & Ou, 2001, p. 7).

Another interesting study has been conducted by Kaiser and Müller-Seitz (2008): they
identified the intrinsic and extrinsic stimuli that motive lead users to support the
software development of a for-profit organization by utilizing weblog technology. They
studied MLB (Microsoft Longhorn Blogosphere) that was a blog not officially
administered by Microsoft (even if Microsoft encouraged its employees to participate in
it) and that has been created when Vista was launched (Kaiser & Müller-Seitz, 2008, p.
205). The intrinsic stimuli identified were: high degree of freedom, having impact and
reciprocal social exchange (Kaiser & Müller-Seitz, 2008, p. 210-213). The **extrinsic stimuli** identified were: signaling competence and getting support (Kaiser & Müller-Seitz, 2008, p. 213-215). We can observe here that the motivation factors identified differ from the ones identified by Hars and Ou. This study showed that a firm can benefit from an “outside” community by accessing to the knowledge and innovative ideas of users (Kaiser & Müller-Seitz, 2008, p. 216). This study is a good example of how online communities can help identifying lead users and their motives, but again we have to keep in mind that this study was a specific example.

Wu and Sokoco have examined consumers’ motives and trust on knowledge sharing. A precision to add is that knowledge sharing has two dimensions: co-consumption (knowledge distributed to other members of the community) and co-production (knowledge given to the producer to increase the efficiency of the product) (Wu & Sokoco, 2010, p. 12). The study differentiates three different kinds of motives: related to achievement, affiliation and power (Wu & Sokoco, 2010, p. 11). The study concludes that the two key determinants for members of online communities to share knowledge and have favorable behavioral intentions (characteristics of trust) toward the brand community are **achievement and power motives** (Wu & Sokoco, 2010, p. 17). Hence, the authors suggest that marketers should take some initiatives in the light of these results: for example, they could reveal some exclusive information about the forthcoming products to the active members (Wu & Sokoco, 2010, p. 17). This study is based on the example of an iPhone online community in Thailand: it is therefore a very specific example, which could maybe not be extrapolated in all industries but gives some ideas of the motives to share.

Harhoff, Henkel and von Hippel (2003) have also tried to understand how users benefit by freely revealing their innovations. This article is interesting because it gives different examples of industry in which the users were free revealing: semiconductors, chemistry analyzer equipment and open source software (Harhoff, Henkel and von Hippel, 2003, p.1757-1759). They show that information transfers without any monetary compensation are frequent and can be called voluntary information spillovers (Harhoff, Henkel and von Hippel, 2003, p. 1767). The authors show that when a user has an innovative idea, he has three choices: licensing (quickly given up because of too many drawbacks), keeping the secret or revealing it (Harhoff, Henkel and von Hippel, 2003, p. 1767). The authors develop a model introducing the four variables influencing this decision: intensity of competition, degree to which innovation has a bias favoring the innovating user, the value to the innovating user of the improvements that free revealing leads the manufacturer of the innovation to make and distribute to all users equally, the cost to each user of adopting the improved commercial product (Harhoff, Henkel and von Hippel, 2003, p. 1754-1757). The authors observe that free revealing can be practiced in different industries but at the same time they are quite specifics and always correspond to high-technology products.

### 3.7 Best Practices of Customer Knowledge Management

After defining what CKM is, presenting its shortcuts, and describing what the motivation of customers are, we will now present the five best practices we have identified in the existing literature. It is the most important part of our review since it will be the basis of our empirical study. We will indeed analysis the applicability of the
five best practices at Komatsu Forest and draw our recommendations after having interviewed the key employees of the company.

3.7.1 The interaction model

The interaction model has been developed by Garcia-Murillo and Hannabi (2003, p. 879-880) and is in line with the view of Prahalad and Ramaswamy (2000) who argue that it is especially through the direct interactions with the customers that the firm will be able to access customer’s knowledge. Garcia-Murillo and Hannabi state that the “objective is for the salesperson to be the collector of knowledge from customers and then use that knowledge to help other customers” (2003, p. 875). From this statement we see that the knowledge recipient will be the salesperson and that the exchange of knowledge will take place at any time there is an interaction with customers. They also consider that it is a two-way exchange of knowledge, as the firm will also provide knowledge to its customers (Garcia-Murillo and Hannabi, 2003, p. 876). We now describe the three stages of the interaction model:

➤ **Stage 1: knowledge revealing**
In any interaction between a firm and its customers, both parts come with their own experiences and knowledge. The role of the salesperson will not only be to answer the questions of the customers but rather to guide the interaction with the aim to acquire knowledge. The salesperson can gather customers’ knowledge about: their preferences, the competing products and how they attract the customers and the industry trends for the future. The salesperson also has to identify the knowledge needs of its customers in order to provide him with this knowledge during their next interaction (Garcia-Murillo & Hannabi 2003, p. 879).

➤ **Stage 2: knowledge sorting**
The interaction between the customer and the salesperson will be rich only if there is an exchange of knowledge, which is a prerequisite for the creation of new knowledge. Therefore, the salesperson should not only be trained to identify the knowledge a customer possesses, but also to see where there is a lack of knowledge, common or not to both parts, and to fill that gap. It will also enable the firm to have a deep understanding of the customer requirements both in terms of product and services (Garcia-Murillo & Hannabi 2003, p. 879-880).

➤ **Stage 3: knowledge levelling**
The last step will take place when ending the interactions, which is a critical part. The salesperson has to be sure that both him and the customer have got the necessary amount of knowledge required to generate a win-win situation. When the interaction is ended, the task of the salesperson is not over, since he will have to document the collected knowledge into a knowledge base.

The model may appear simple to marketing specialists but we assume that most companies are not using the knowledge from their customers as they could do it, and have therefore a lot to learn by implementing the interaction model. In addition, beyond the benefits of acquiring new knowledge, firm will have a chance to improve in the following fields: salesperson training, organizational alignment towards knowledge and customer relationship.
Indeed, it is critical that the salespeople of the firm be well trained as they will be the recipient of the knowledge and also those who will identify the most knowledgeable customers. Every interaction with the customer will generate an experience that has to be personalized and encourage the customer to share what he knows (Prahalad & Ramaswamy, 2000, p. 86). The process of sharing knowledge between the firm and the customer will also strengthen their relationship, which has to be more and more collaborative (Garcia-Murillo & Hannabi 2003, p. 883). In today competitive market, being better than its competitors in terms of relationship can be seen as a competitive advantage (Prahalad & Ramaswamy, 2000, p. 881). Last but not least, implementing the interaction model will require companies to prepare the organization in order to manage effectively the new knowledge acquired by its employees (Prahalad & Ramaswamy, 2000, p. 88; Garcia-Murillo & Hannabi 2003, p. 883).

3.7.2 Customer focus group

The first method we just detailed generally takes place when the customers and the firms interact with each other in the context of a normal business relation, which makes the interaction rather informal. In addition, the number of participants is generally limited to the customer and the firm sales representative. On the opposite, customer focus groups involve a formal process and more than two participants. According to Bristol and Fern (2003, p. 435) “Focus-group interviews involve an interactive discussion of specifics topics by a small group of individuals guided by a moderator”.

In customer focus group, the small group of individuals is composed by selected customers and the moderator –a representative of the firm- who can also be called “facilitator” (Hanson & Thorson, 2003, p. 2). In order to understand how customer focus group work we will first present in the table 5 the objectives, advantages and disadvantages of this practice. Then we will detail the process that the firm must undertake when using customer focus groups.

Table 6. Objectives, advantages and disadvantages of customer focus group

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>-Provide feedback regarding products, services, future projects or initiatives.</td>
<td>-Relatively easy to undertake.</td>
<td>-Require highly skilled facilitators.</td>
</tr>
<tr>
<td>-Provide knowledge regarding current and future needs.</td>
<td>-Result may be obtained promptly.</td>
<td>-Individuals responses may be influenced by others in the group.</td>
</tr>
<tr>
<td>-Suggest practical improvements.</td>
<td>-The social interaction may produce new knowledge.</td>
<td>-Results may not be fully representative due to selection biases.</td>
</tr>
<tr>
<td>-Promote the customer orientation of the firm.</td>
<td>-Possibility for the facilitator to interact with users and solicit greater detail in responses.</td>
<td></td>
</tr>
<tr>
<td>-Build stronger relationships with customers.</td>
<td>-Outcomes of the interactions tend to have a high validity.</td>
<td></td>
</tr>
<tr>
<td>-Encourage the share and creation of knowledge.</td>
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</tr>
</tbody>
</table>
In order to overcome the shortcuts of the method and maximize its benefits, firms have to respect the following stages.

1) **Define clear objectives before starting the project.** It means that the firm initiating the focus group must exactly define what it is looking for, before going further in the process (Hanson & Thorson, 2003, p. 3). In the case of a customer knowledge management project, the objective will certainly be to encourage customers to share and to create knowledge during their interactions.

2) **Select a highly skilled facilitator.** It is also critical because it is the facilitator who will guide the interactions and make the sharing of knowledge possible. He will also have the responsibility to select the participants and plan the next steps of the process (BPIR, 2006).

3) **Recruit the right mix of customers.** The facilitator will have to select, contact and convince the users that have been identified as being the most appropriate for the project (Hanson & Thorson, 2003, p. 4).

4) **Organize well conceived meetings.** It is important to develop in advance a detailed agenda of the meeting, which includes the outcomes and the important aspects to consider. It will encompass the topics and the questions that will be presented to the participants and must make the objective of the meeting clear to everyone (Hanson & Thorson, 2003, p. 4).

5) **Favor the creation of a committed team.** Bringing the appropriate people together will not be sufficient and the facilitator will have to make them work together as a team. For example, team building exercises can be undertaken at the beginning of the project, which will enable the participants to know well each other (Hanson & Thorson, 2003, p. 6).

6) **Maintain a consistent participation.** Along the project it might happen that some participants be less active or do not fully understand the topic being discussed. Therefore the facilitator must make sure that the participation of everyone is consistent towards the determined objectives of the firm (Hanson & Thorson, 2003, p. 7).

7) **End the project and communicate the results.** This last stage should not be underestimated as it will influence a lot the overall perception of the project by the customers. They will certainly appreciate to know what the result of the time they invested is and to know how they will benefit from it (BPIR, 2006).

Customer Focus Groups are therefore an interesting tool for organizations that are looking for the acquisition of knowledge from their customers and also for the strengthening of their relation with their customers. We can notice that the identification of the most knowledgeable customers will be possible thanks to the implementation of the interaction model.

**3.7.3 Communities of practice including customers**

Communities of practice (CoPs) have been recognized as being an important platform for learning and have shown interesting results (Oborn & Dawson, 2010, p. 843). Etienne Wenger (2004, p. 2), a famous author in the field of CoPs, provides us with the following definition: “Communities of practice are groups of people who share a passion for something that they know how to do, and who interact regularly in order to learn how to do it better”. He argues that people may be expert of one field, related to another one, in which they can gain new knowledge by interacting with an expert of that
second field (Wenger, 2004, p. 2). Generally, CoPs span the functional but not the organizational boundaries of the firm and Gibbert et al. (2002, p. 10) propose to integrate expert customers to the communities. Including various experts with different backgrounds has been shown to broaden the outcomes in terms of knowledge creation (Oborn & Dawson, 2010, p. 854).

As a consequence we consider that gathering experts coming from outside the organization, such as customers or external consultants, will enable the firm to acquire and favor the creation of new knowledge, among which we will find knowledge from customers. In order to create a community of practice with experts coming from different places, the firm has to respect the following three fundamental characteristics of a CoP (Wenger, 2004, p. 3).

- **Domain**: a CoP has to be about an area of knowledge common to the practitioners, which needs to be developed and explored.
- **Community**: the experts that will work together need to form a real community, which means that they will develop relationships between each other, enabling them to solve common problems and to share knowledge.
- **Practice**: the experts must also have in common the “body of knowledge, methods, tools, stories, cases, documents” involved in their practices (Wenger, 2004, p. 3).

Communities of Practice can be formal as well as informal. Indeed, it may happen that a group of experts gather informally because they have at a precise moment a common interest. It can therefore be an informal meeting, with no prior preparation. However, we consider that for CKM purposes, Communities of Practice have to be formally organized by the firm if it wants to benefit from it. Indeed, there is a need for gathering experts and to set up a structure in order to make them interact with each other on a specific topic.

In that case, the steps to follow when developing a CoP will be very similar to those of the focus group: definition of clear objectives, selection of a project leader, selection of the participants, etc. If the community responds to the characteristics mentioned above and if the firm carefully follows the steps of the process, the outcome will likely be positive for the firm. The differences between CoP and customer focus groups are that it focuses on practical knowledge and involve multiple interactions between customers, external experts, and the firm. Finally, it is worth noticing that the identification of expert customers can be achieved during customer focus groups, where customers’ knowledge can be easily evaluated.

### 3.7.4 Building online customer communities

Today companies have to consider that their dialogue with their customers is a dialogue of equals (Prahalad & Ramaswamy, 2000, p. 82). Indeed, customers are more and more active in the marketplace, especially with the rise of the Internet over the last ten years. Already in 2000, Prahalad & Ramaswamy argued that online customer communities would have a relatively strong impact on the market evolution (Prahalad & Ramaswamy, 2000, p. 86). Ten years after it appears that their vision was right, as many companies have succeeded in developing and managing online communities, where customers can interact with each other and share their knowledge (Paterson, 2011, p. 44). Online communities are internet-based platform where people generally use a login
name and interact on specific topics. The Internet enables a better connectivity between the different actors involved in the innovation process of the firm (Jeppesen & Frederiksen, 2006 p. 45). Dedicated to customers of a specific product or company, it enables a flow of information between customers with each other or with the firm, which can then be converted into knowledge by the firm (Paterson, 2011, p. 45). In addition, the firm will have to manage the customer diversity in terms of knowledge, which can be seen either as a difficulty or as an opportunity to create richer interactions (Prahalad & Ramaswamy, 2000, p. 87).

After her research among companies and customers who are using online communities, Paterson noticed that both the firm and the customers have several advantages in participating and developing such communities (Paterson, 2011, p. 46). Thanks to online communities, firms can: strengthen their relationship with their customers and increase their loyalty, develop new marketing tools adapted to the internet and increase the customer satisfaction through a better understanding of what creates value for the customers (Paterson, 2011, p. 46 & 47). We can therefore deduce that online communities are a convenient way for companies to gather and integrate knowledge from their customers, especially when customers from different backgrounds come with their own specific knowledge and make the online interactions a rich content. These findings are in line with what Jeppesen and Frederiksen state: “Firm uses online access to an innovative user community to benefit from complementary user innovations that extend the scope of its original product” (Jeppesen & Frederiksen, 2006 p. 45).

Looking at the customers’ motivations, Paterson argues that three main factors attract customers in participating in online communities: the value of content that is exchanged by the community members, the need for sociability of the participants and the service and support that customers can get in their community (Paterson, 2011, p. 48).

Creating online communities therefore appear to be an ideal practice for companies that aim at getting knowledge from their customers. Yet, there are some rules to follow if the firm wants to maximize the benefits they can gain (Paterson, 2011, p. 50):

- Create a place in the community where members can discuss about a topic unrelated to the general area of the community. It will encourage the members to participate more often.
- Promote the participation through rewards for the most active members, who are keen on sharing their knowledge and who has a respectful behavior.
- Maximize the exchange of knowledge between members by facilitating the possibility to ask questions to a specific department of the firm.
- Control the content being exchanged in the community, especially when it comes to spamming and flaming.
- Encourage to create reviews about the company product that can be published online.

Customer online communities seem to be an interesting possibility for any company to integrate even more its customers into its network, which will encourage the sharing and creation of knowledge. In addition, online communities are used by firm to identify the most knowledgeable users through a technique called netnography. It can be very useful for the implementation of the lead-users approach, a practice that we will now present.
3.7.5 The lead-users approach

The lead-user approach, first introduced by Von Hippel in 1975, is certainly today the most developed practice when it comes to customer knowledge management. It is also the method that requires the most resources and which implementation involves highly skilled personal. It relies on the involvement of lead-users into the development of products, and aims at using customers as innovators in order to create value (Eisenberg, 2011, p. 50). Von Hippel defines lead-users “as individuals or firms who display both of the two following two characteristics: lead users have new product or service needs that will be general in a marketplace, but they face them months or years before the bulk of the market encounters them, and they expect to benefit significantly by finding a solution to their needs” (Von Hippel, Churchill and Sonnack, 2009, p. 7). The lead-users approach, if properly implemented, will enable companies to create new product and service concepts, new market applications and can even induce new strategic directions (Eisenberg, 2011, p. 51). It directly involves the knowledge from customers into the new product development process of a firm, which can either lead to an incremental or a radical innovation (Von Hippel & Thomke, 2005, p. 7). However, lead-users projects are complex to implement and companies have to follow a clear process (figure 12).

Similarly to other methods or tools employed in business-related fields, the lead-users approach has advantages to maximize and challenges to overcome. Eric Von Hippel has studied during 35 years companies that have used the knowledge of lead-users and states that a good implementation of the process provides firms with the following advantages (Von Hippel & Thomke, 2005, p. 8). First, it better satisfies the subtle aspect of the customer needs that can be hardly articulated by the customers. Second, the inclusion of customers into the product development will reduce the time to market thanks to a reduction of interfaces and to easier relations between the firm and the customers. Third, it is likely to provide the firm a competitive advantage thanks different insights and solutions brought by the customers that can be leveraged for breakthrough innovation (Eisenberg, 2011, p. 56).

Figure 12. Implementing a lead-user approach
Source : Von Hippel et al., 2009, p. 4
Looking at the challenges implied by the lead-users approach, we can highlight four of them that are faced by most companies:
- Finding the lead-users and the people to interact with them inside the company (Eisenberg, 2011, p. 56).
- Convincing the identified lead-users to participate in the project, which is very often a problem of time (Eisenberg, 2011, p. 57).
- Be humble during the whole process and remaining open-minded to new solutions brought by the customers for the firm not to exclude valuable solutions to quickly (Eisenberg, 2011, p. 57).
- Allocating enough time to the project, which last four months in average (Von Hippel et al., 2009, p. 8). It will require the firm to be perfectly organized and to employ people that have experience in managing long processes (Eisenberg, 2011, p. 57).

Ivy Eisenberg (2011, p. 57) sums up the challenges faced by companies: “Successful implementation of the method requires appropriate management support, careful team selection, and sufficient time to allow insights to develop”.

Lead-users projects are certainly the most rewarding practice for companies that decide to transform their most knowledgeable customers into innovators. However, it is also the toughest practice, as it requires a lot of time, a high organizational readiness and highly skilled employees (Von Hippel et al., 2009, p. 12). That is the reason why we presented it after the other methods, which can be applied by most of the companies. We argue that before undertaking a lead-users project firms should first gain experience by implementing the other four practices we have described.

### 3.7.6 Conclusion on the best practices of CKM

We have identified five practices that enable firms to integrate knowledge from their customers: the interaction model, customer focus groups, communities of practice including customers, online customer communities, and lead-users projects. These practices require different levels in terms of organizational readiness, of experience in managing project with their customers, and of resources usage. They also differ about whether the focus is on acquiring/coordinating the knowledge or if it is rather on knowledge creation. In addition, depending on the practice the types of knowledge will also be different: knowledge about the needs, about the products or about the markets for instance. In order to have an overall view of the different practices, we have summarized their main characteristics in the table 6. We rated the three first criteria on a scale from 1 to 5. For example, we consider that the organizational requirements for the interaction model are low; hence we rated it at 1. When stating that a practice is more oriented towards the acquisition of knowledge, it does not mean that it does not lead to the creation of new knowledge but rather than in average, the practice will be more likely to enable the acquisition. We have build this table according to the readings of all mentioned articles and particularly paid attention to the example provided in the articles.
We therefore consider that firms willing to implement a practice of customer knowledge management should first look at the different factors characterizing each practice. We also think that firms should proceed step by step and make sure that all conditions are gathered for them to carry out the project.

3.8 Conclusion of the literature review

If we look back at our two main objectives for this literature review, we can assume that they are fulfilled, which allows us to pursue our study and to move to the empirical part of our research. We have indeed developed our review according to the framework we presented at the beginning of the review, which was made for us to understand the different evolutions of the firm over the past 30 years. It is very critical for our empirical study, as we will have to compare the evolutions of the firm according to our review and the evolutions of Komatsu Forest. Hence, the first step for us is to analyze Komatsu Forest and its orientations, before going more and more towards the utilization of knowledge from customers. Thereafter, it will be possible investigate the different possibilities for Komatsu to use knowledge from their customer in order to increase the value of their offerings.

The capacity of a firm to implement the five best practices we have identified indeed depends not only on its internal capacity to manage knowledge but also on its external orientation. It will have an impact on the value the firm creates and therefore also on its overall performance. That is why we had to cover all the different fields we studied in our literature review. We had to have to very understanding of these fields in order to perform our empirical study, which we present in the next sections.

Table 7. The different CKM practices

<table>
<thead>
<tr>
<th>Practices</th>
<th>Organizationa l requirements</th>
<th>Need for experience</th>
<th>Allocated resources</th>
<th>Acquisition or creation</th>
<th>Types of knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction model</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>Acquisition</td>
<td>Needs, markets, competitors</td>
</tr>
<tr>
<td>Customer focus groups</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>Creation</td>
<td>Needs, products, practices</td>
</tr>
<tr>
<td>CoPs with customers</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>Creation</td>
<td>Products, practices</td>
</tr>
<tr>
<td>Online customers communities</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Acquisition</td>
<td>Needs, markets, products</td>
</tr>
<tr>
<td>Lead-users project</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>Creation</td>
<td>Products, needs</td>
</tr>
</tbody>
</table>
Chapter 4: PRACTICAL METHOD

4.1 Description of case study research and its implications for our analysis

To define the methodology of our thesis, since it was a case study, we needed a specific literature to help us in the process of elaborating the right methodology adapted to our context. We have mainly used the book “Case study research. Design and methods” written by Yin, which was recommended in the manual thesis.

4.1.1 The design of our case study

An important phase of our research was to clarify the design of our case study. To realize a case study, research design has to be established: it is more than a work plan and is meant to avoid the situation in which the evidence does not answer the initial question (Yin, 1994, p. 21). It is composed of five elements. The first one is a study question (Yin, 1994, p. 21): as we have previously seen, the form of the question asked is a ‘how’ (and this was one of the reasons why we should use a case study strategy). The second component is to study propositions if any: in our case, since it is “a subject of exploration”, having propositions is not systematic (Yin, 1994, p. 22). The third component is a unit of analysis (Yin, 1994, p. 23): here it is Komatsu Forest. Finally, the design has to indicate what will be done after the data will be collected, that is to say the logic linking the data to our study question and the criteria for interpreting findings (Yin, 1994, p. 26-27): these aspects will be described deeper in the following parts.

Another important aspect in designing the method is the role of theory. Indeed, as Yin stated, “theory development as part of the design phase is essential, whether the ensuing case study purpose is to develop a theory” (1994, p. 28). Here, the research question aims at applying the practices that we have deduced from the literature review in Komatsu Forest’s case.

When these general characteristics have been established, we can identify the specific design of our case study. Four types of designs are distinguished, based on a 2 x 2 matrix corresponding to a single or a multiple case and to a single or a multiple unit of analysis (see figure 13 below, Yin, 1994, p. 39).
Our case study is a single-case, as opposed to a multiple-case study, since we analyze in depth one organization: Komatsu Forest. It is also holistic because we study one process of the company, that is to say one single-unit of analysis. Now we will see how we prepared ourselves for the data collection.

4.1.2 Preparation for data collection

When conducting a case study, we have learnt that it is necessary to build a case study protocol, which is “a major way of increasing the reliability of case study research and is intended to guide the investigator in carrying out the data collection from a single-case study” (Yin, 1994, p. 67). According to Yin (1994, p. 69), a protocol should have four different sections. We know that using strictly this method could probably to too time-consuming, especially given the deadlines and the fact that most of the parts included in it already have to be present and written according to the requirements of the thesis methodology. Nevertheless, we used it to get at least an overview of its content in order to be sure that we do not forget any step or information all along the realization of our case study. We will thereby apply these four steps of the protocol for our purpose, by referring to other parts of our thesis report whenever it is possible in order not to repeat ourselves (see table 7 below).
Table 8. Our case study Protocol

<table>
<thead>
<tr>
<th>Sections</th>
<th>Detailed content</th>
<th>Application on our research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An overview of the case study project:</td>
<td>Project objectives</td>
<td>See Chapter 1 - Introduction</td>
</tr>
<tr>
<td></td>
<td>Case study issues</td>
<td>See Chapter 2 - Scientific method</td>
</tr>
<tr>
<td></td>
<td>Relevant reading about the topics</td>
<td>See Chapter 3 - Literature review</td>
</tr>
<tr>
<td>2. Field procedures</td>
<td>Access to the case study “sites”</td>
<td>See part of Chapter 4 about the Interviewing Method: thanks to our contact person, Britta Näsman, we got access to the key actors</td>
</tr>
<tr>
<td></td>
<td>Having sufficient resources</td>
<td>We had all the materials needed (computer, recorder) and the interviews took place at Komatsu Forest site.</td>
</tr>
<tr>
<td></td>
<td>Procedural reminders</td>
<td>We created naturally our own procedures: - Our contact person first asked to the other 3 interviewees to participate and explained to them the topic - We took contact by phone with the interviewees in order to set a meeting. - We sent them an email 2 days before the interview to remind them the date and brief them a bit more about the subject.</td>
</tr>
<tr>
<td></td>
<td>Making a clear schedule</td>
<td>According to the deadlines required by the thesis, our personal Gantt schedule we established and the easter holidays we planned to have half of the interviews just before easter and half just after easter.</td>
</tr>
<tr>
<td></td>
<td>Providing for unanticipated events</td>
<td>Our schedule was made to finish earlier than required in case of unexpected events. Hence, in case of change in the availability of interviewees, we could have postponed them.</td>
</tr>
<tr>
<td>3. Case study questions</td>
<td>Specific questions that the investigator should keep in mind when collecting the data</td>
<td>Two main objectives of the interviews (more detailed in the part about the Interviewing Method). - Understand how knowledge from customers was integrated at Komatsu Forest. - Assess if the 5 best practices identified thanks to the literature review could be applied.</td>
</tr>
<tr>
<td></td>
<td>The potential sources of information for answering each question</td>
<td>On the whole, the richest source of information were the interviews (see part about the Interviewing Method). We also collected documentation and archival records but it was more general facts and figures about the company since they were mostly public (see table 9 in the next part &quot;Collecting the data&quot;). We asked mostly these documents to our contact person.</td>
</tr>
<tr>
<td>4. A guide for the case study report</td>
<td>Outline</td>
<td>See outline or the study Chapter 1 - Introduction</td>
</tr>
<tr>
<td></td>
<td>Format for the data</td>
<td>- Research methodology requirements from Umeå University - See last part chap 7 yin???</td>
</tr>
<tr>
<td></td>
<td>Use and presentation of the documentation</td>
<td>We have made a reference list of the documents provided by the company in order to provide more transparency and the interviews have been entirely transcribed (to the extent of agreement with the interviewees) and kept available.</td>
</tr>
<tr>
<td></td>
<td>Bibliographical information</td>
<td>Exhaustive Reference list of the literature used.</td>
</tr>
</tbody>
</table>
4.1.3 Collecting the data

We have used three different sources of data, referred by Yin as “sources of evidence” (Yin, 1994, p. 86): interviews (see next part 4.2 Interviewing Method), documentation (brochure, website, guest lecture), and archival records (internal power points, among them an organizational chart). These three sources we used were the most useful and adapted in our situation: they were available when we asked for them at Komatsu Forest and they included all the information we needed. While the documentation and the archival records were more useful to present and understand the company with some facts, the interviews provided us with a rich empirical data enabling us to investigate and to answer our research question.

We know that there are other “sources of evidence” such as direct observations, participant-observations and physical artifacts (Yin, 1994, p. 86). Nevertheless, since it was not feasible to assist or to participate in some meetings either between the different departments, or with the customers (partly because of the language barrier), we did not use direct observations and participant-observations. Even if we came to the site of Komatsu Forest and have seen the facilities and the products, we cannot qualify it as observation since it did not bring anything directly to our study. In addition, we did not use physical artifacts as well because it was not possible and relevant to collect logical device or instrument for example in our case.

By collecting and treating the data, we have followed as much as possible the three main principles introduced by Yin (1994, p. 97): diversify the sources of data, create a case study database and maintain a chain of evidence. Indeed, we have tried to use as many different sources of evidence as possible even if we were limited by the situation and the subject as we said previously. We have then created a case study database as advised by Yin (Yin, 1994, p. 101). We took care of gathering all the information collected (notes, documentation, files, records) and to translate the interviews correctly just after their realization. Finally, we have tried to maintain a chain of evidence (Yin, 1994, p. 105), that is to say not lose any original evidence and maintaining a transparency in our analysis. The table 8 below summarizes our needs of information and the sources we were hoping for in order to satisfy these needs.
4.1.4 Data processing and analyzing

As Yin said, we are conscious that case study analysis is the most difficult part in the doing a case study and there is no premade recipe to use (Yin, 1994, p. 139). Therefore, we specifically paid attention to this part in order to provide us with a solid basis and to perform this task as efficiently as possible.

According to Yin, it is first essential to adopt a general strategy (Yin, 1994, p. 111). On the whole, we relied on the strategy consisting in “relying on theoretical propositions” (Yin, 1994, p. 111-112). Indeed, the literature review was important and the design of our case study was based on it. The knowledge acquired thanks to the literature helped us to shape our data collection and gave us the structure to analyze the data. At the same time, while one part is more descriptive (since we wanted to understand the current situation of Komatsu Forest), the last part of our research is more exploratory (because we wanted to explore if some practices of CKM could be implemented at Komatsu Forest, that is why we have used partly the last strategy introduced by Yin (1994, p. 114) called “developing a case description”. It consists in developing a descriptive framework for organizing the case study (Yin, 1994, p. 114).

Concerning data processing, as previously explained we transcribed each interview after they occurred. With all the information obtained from different sources (the interviews, the website, the documentation and the archival records), we have used some of the analytic manipulations described by Miles and Huberman (1994, cited in Yin, 1994, p.110):
  - Putting information into different arrays
  - Making a matrix of categories and placing the evidence within the categories

<table>
<thead>
<tr>
<th>Objective</th>
<th>Sources Request</th>
<th>Efficient Realization</th>
<th>Number and Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning more about Komatsu Forest activity</td>
<td>Descriptive brochures of the company</td>
<td>Yes</td>
<td>1 brochure “We are Komatsu Forest” 1 power point &quot;The world of Komatsu&quot;</td>
</tr>
<tr>
<td></td>
<td>Komatsu Forest Website</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Knowing more about the organization for the headquarter</td>
<td>Descriptive brochures of the site in Umea</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organizational Chart</td>
<td>Yes</td>
<td>1 power point: &quot;Organizational chart&quot;</td>
</tr>
<tr>
<td></td>
<td>Komatsu Forest Website</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ask during interviews</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Learning about the market of Komatsu Forest (information and figures)</td>
<td>Guest lecture conducted by Britta Nilsson</td>
<td>Yes (not the powerpoint but our notes)</td>
<td>1: Notes about the lecture: &quot;Business marketing in forest machinery business&quot;</td>
</tr>
<tr>
<td></td>
<td>Ask during interviews</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Komatsu Forest Website</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>The role of knowledge at Komatsu Forest</td>
<td>Ask during interviews</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Procedures</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Archival records</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Current practices in customer orientation and CKM</td>
<td>Ask during interviews</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Archival records</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>CKM formal practices can be implemented at Komatsu</td>
<td>Ask during interviews</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Archival records</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Creating data displays for examining the data: we have realized two flow charts BPM

Hence, we will start by presenting the company. We will then present the data we got from the interviews relying on the theoretical framework: indeed, by analyzing the current situation and their practices in using knowledge from customers, we based our analysis on the literature review acknowledgement. Afterwards, we will discuss the possibilities of implementing new formal practices by developing a case description. Given that no research has been done to investigate if some formal practices of CKM in this industry are possible, it constitutes an exploratory subject and we will therefore construct by ourselves our own analysis structure.

4.2 Interviewing method

We, as student and researcher for the first time of our life, considered that we had to learn a lot about the art of interviewing. Therefore, we used the book written by Kvale and Brinkmann: Interviews, learning the craft of Qualitative Research Interviewing (2003). We have chosen this book following the recommendation of literature in the thesis manual and we have used it to design our interviewing method and to justify our choices. We will now present our approach and its consequences on our interview study.

An interview in qualitative research aims at understanding the world from the point of view of the interviewee (Kvale & Brinkmann, 2003, p.1). As our research is based on understanding the current practices in CKM and analyzing the opinion of employees from Komatsu Forest about the key practices of this area, we are convinced that conducting interview is the best way to achieve our objectives. Leading interviews is the only way to gather this amount and nature of data. We also think that semi-structured life world interview will be appropriate for our research in the sense that it will enable us to obtain descriptions of the interviewee’s points of view and to interpret the meaning of these descriptions (Kvale & Brinkmann, 2003, p. 3). We therefore confirm that we have an interpretivism conception of knowledge, as “the process of knowing through conversations is intersubjective and social, involving interviewer and interviewee as co-constructors of knowledge” (Kvale & Brinkmann, 2003, p. 18). It will naturally influence the way we will build our interview guide and how we will conduct the interviews. The description of a semi-structured interview made by Kvale and Brinkmann expresses exactly what we intend to do: “It comes close to an everyday conversation, but as a professional interview it has a purpose and involves a specific approach and technique; it is semi-structured - it is neither an open every day conversation nor a closed questionnaire. It is conducted according to an interview guide that focuses on certain themes and that may include suggested questions (Kvale & Brinkmann, 2003, p. 27). Hence, we will prepare the interviews by carefully stating its purpose and objectives, with prepared open-questions that have to prompt descriptions of how the interviewee sees the world. The methodology proposed by Kvale & Brinkmann indeed relies on seven stages: thematizing, designing, interviewing, transcribing, analyzing, verifying and reporting (Kvale & Brinkmann, 2003, p. 102). These stages cover all the main areas that need to be understood by the researcher before interviewing. We will now detail how we proceeded for the thematizing and designing of the interviews.
4.2.1 Thematizing of the interviews

According to Kvale and Brinkmann (2003, p. 105): “thematizing refers to the formulation of research questions and a theoretical clarification of the theme investigated”.

The main objective of our research is to investigate the current use of customer’s knowledge at Komatsu Forest and to evaluate the applicability of the practices we have identified. To achieve this objective we need to understand several aspects of Komatsu Forest. Given that CKM is the logic follow-up of some trends such as knowledge management and customer orientation (see figure 3 of the literature review), we will need to investigate specific topics: the way knowledge is treated, especially knowledge related to customers and the orientation of the company. From these two topics, we will be able to understand the current practices of CKM before moving to the second part of the interview meant to investigate which formal practices could be implemented. As a consequence, our interviews will be guided by the following questions:

- How does the company manage knowledge and how does it manage customer related information?
- What is the orientation of the firm?
- What are the current uses of CKM?
- What are the CKM practices that can be the implemented more formally at Komatsu Forest in a near future?

Looking at the themes we will have to address, we will first have to get a description of Komatsu Forest’s current situation, both from an internal and external perspective, and see what the company is currently doing in terms of knowledge management and customer-orientation. Thereafter, we will look at their actual usage of knowledge from the firm’s customers, and what kind of relationships it has built with them. Finally, we will present the five CKM practices to the interviewees and concretely discuss with them the possibilities for implementing formally these practices at Komatsu Forest.

According to Kvale and Brinkmann, there are two main kinds of interview: explorative or hypothesis-testing. We assume that our interviews will be explorative, as it introduces an area to be covered with the opinions and descriptions of the interviewees, which are followed by the search of new information and new angles on the topic (Kvale & Brinkmann, 2003, p. 106). The consequence is that we will have rather open interviews, with areas to address and to discuss with the interviewees in order to proceed to our analysis.

4.2.2 Designing of the interviews

When designing the interview, it is important to have in mind the plan of the study that will enable the researchers to reach their objectives (Kvale & Brinkmann, 2003, p. 102). Therefore, we have paid particularly attention to:
- Selecting the right person for the interviews.
- Using an appropriate approach to gather the knowledge sought.
- Building a guide that will ease the collection of the information we are looking for.
- Preparing the interview with the necessary material.
- Recording and transcribing the interview.

The completion of these tasks, which we describe below, has led us to the analysis part of our empirical study.

4.2.2.1 Selection of the interviewees

We got in touch with Komatsu Forest during a guest lecture hold by Britta Näsman, who had accepted to meet us later in order for us to present her our project. During this first informal meeting, we presented our topic and the case-study we wanted to perform on Komatsu Forest. As we said in the introduction we were convinced that it would be interesting both for us and the firm to conduct our research through a case-study of Komatsu Forest. Ms. Näsman was enthusiastic towards our research project and implicitly agreed to be our contact person in the firm. It is therefore thanks to her that we could select and contact the interviewees. The four employees working at Komatsu Forest that we interviewed are:

- **A market analyst.** The interview was conducted in a meeting room at Komatsu Forest on 20th April at 8.30. She has been working in the company for five years.
- **A technology manager** of the R&D Department. The interview was conducted in a meeting room at Komatsu Forest on 20th April at 10.00. He has been working in the company for 23 years.
- **A product planning manager.** The interview was conducted in a meeting room at Komatsu Forest on 26th April at 09:00. He has been working in the company for 6 years.
- **A sales responsible** for Sweden. The interview was conducted in a meeting room at Komatsu Forest on 26th April at 10:30. He has been working in the company for 26 years.

We thought it was important to gather the opinions and experiences of people with different functions within the firm, and who all have to consider the possibility to maximize the use of knowledge from their customers. All of them have contacts either with the market, the customers, the products, or all of them; that’s why we selected them. It was also for us a good way to be sure that we do not neglect any aspect of the firm’s situation and to provide coherent recommendations.

4.2.2.2 Using an appropriate approach to gather the knowledge sought

The approach that we used for the interviews has influenced the knowledge that we have generated. We decided to conduct semi-structured life interviews so that the interviewee can describe the situations openly, without too much structures and guides from our side. It has enabled us to shed light on aspects that we did not considered at the beginning.

4.2.2.3 Building a guide for the interviews

According to Kvale and Brinkmann (2003, p. 130), “an interview guide is a script, which structures the course of the interview more or less tightly. For the semi-structured
type of interview, the guide will include an outline of topics to be covered, with suggested questions”. We have followed the recommendations of the two authors and build our guide by pointing out the objectives related to the topics of our research, then by translating these objectives into researcher questions, and finally by transforming them into interviewer questions. The objectives originate from our research questions, which we have then linked to researcher and interviewer questions (see appendix 1). Basically we divided the interview into two parts: one that was made for us to understand what the company is doing in terms of customer relationship, knowledge management and customer’s knowledge from the point of view of the interview, and another one dedicated to the methods of CKM that we have presented to the interviewee.

4.2.2.4 Preparing the interview with the necessary material and recording of the interview.

Besides the guide that is always necessary to design before a semi-structured interview, we have also prepared a PowerPoint presentation in order to present clearly our research and the five best CKM practices we have identified (see appendix 1). It was also necessary to prepare the material to record the interviews, which is an essential part of interviewing. According to Kvale and Brinkmann (2003, p. 178), “methods of recording interviews for documentation and later analysis include audio recording, video recording, note taking and remembering”. It was possible for us to use an audio recorder for three of the four interviews we have conducted, which made the transcription easy and enabled us to concentrate on the topic and the dynamics of the interview. For the other interview we took many notes during the interview and transcribed it directly after the interview so as to have a good remembering.

During the interviews, we divided the questions to make them more dynamic but we also decided to designate a leader each time to guide the interviewee. Since the interviews were semi-structured, the discussion was usually more opened and free after each theme was introduced. Consequently, we had agreed before that both of us had to feel free to speak when having an idea of a further discussion. We thought that it could enable us to get more information and ideas if we could both ask more questions.

4.3 Conclusion of the practical method

We have collected data on Komatsu Forest in two ways. First, we have used internal and external documents provided by the company about its history, its products, its values or its culture for examples. It was important for us to understand the context of Komatsu Forest and to identify the key elements that can have an impact on our research. Second, we have used semi-structured interviews in order to get a lot of information starting with the general context of Komatsu Forest and deepening with precise information about its customer orientation and customer knowledge management. Structured interviews would not have provided us with enough flexibility to collect all the data and unstructured interviews would not have enabled us to lead the interviews as we intended to. Therefore, we had an interview guide and we adopted an informal style of questioning.
Chapter 5: PRESENTATION OF KOMATSU FOREST

This chapter aims at presenting Komatsu Forest: introducing the nature of its products and activity will enable the reader to understand the case study research. We have made this company presentation according to documents provided by Komatsu Forest and to the website of the firm.

Komatsu Forest is a company specialized in forest machinery, which it produces and sell in the whole world. The company offers a wide series of forestry products. It develops, manufactures and markets machines and attachments. It also has an extensive service (spare parts and professional advise) and after sales network. This company is a pioneer in the domain of logging. The headquarters is located in Umeå in Sweden and the company is owned by Komatsu Ltd of Japan (Komatsu Forest [1], 2011). Komatsu operates on business markets since they sell mostly to forestry companies.

5.1 Presentation of the company

5.1.1 History of the company

The company was started in 1961 and since then has evolved to finally become Komatsu Forest in 2004 (see table 10 below). Komatsu Forest is born from the merger of two international companies: Komatsu and Valmet. While Komatsu represents quality, Valmet stands for knowledge and expertise. This merger provided the company with a stronger network and with better service and parts availability. It also provided the company with more R&D resources for technological and methodological innovations (Komatsu Forest [1], 2011).

Komatsu Ltd that has acquired the company in 2004 is the world’s second-largest manufacturer of construction, mining and building machines. It was founded in the Japanese city of Komatsu in 1921. In figures, it represents 40 000 employees (2009) and 49 factories around the world.

Table 10. Company history
Source: Komatsu Forest [2], 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>Umeå Mekaniska is founded</td>
</tr>
<tr>
<td>1976</td>
<td>Acquired by Volvo BM</td>
</tr>
<tr>
<td>1979</td>
<td>Cooperation Volvo BM – Valmet</td>
</tr>
<tr>
<td>1986</td>
<td>Umeå Mekaniska acquired by the Finnish state-owned company, Valmet</td>
</tr>
<tr>
<td>1988</td>
<td>Umeå Mekaniska changes name to Valmet Logging AB</td>
</tr>
<tr>
<td>1994</td>
<td>Restructuring of Finnish state companies. Valmet Logging becomes SISU Logging</td>
</tr>
<tr>
<td>1997</td>
<td>Acquired by Partek and becomes Partek Forest AB</td>
</tr>
<tr>
<td>2004</td>
<td>Acquired by Komatsu Ltd and becomes Komatsu Forest</td>
</tr>
<tr>
<td>2011</td>
<td>The company’s products changes name – Valmet becomes Komatsu</td>
</tr>
</tbody>
</table>
This figure clearly shows to us that Komatsu Forest has a complex and rich history: this history has brought successively knowledge that has been transmitted overtime and has enabled Komatsu Forest to be one of the leaders on the forest industry market today.

5.1.2 A worldwide company

Komatsu Forest is a successful local company from Umeå, as well as a successful global company throughout the world since it is present on six continents (komatsuforest.com). The machines are developed and manufactured at two different sites: one is in Umeå with a focus on the production of wheel-based machines and harvester heads and the other site is in Chattanooga, Tennessee, USA with a focus on tracked machines (komatsuforest.com). Komatsu has 7 sales companies and 30 dealers around the world (Näsman, 2011). The figure 14 below illustrates Komatsu Forest’s presence throughout the world.

Figure 14. Distribution and customer contacts via Komatsu Forest Sale companies and independent dealer throughout the world
Source: Komatsu Forest [2], 2011

5.1.3 Organization

Komatsu Forest has approximately 1 300 employees, among which approximately 450 are in Umeå (Näsman, 2011). The headquarters in Umeå are organized as shown in the following organization chart (figure15). In this figure, we have marked with circles the departments concerned by our research.
There are more than 70 in-house employees working with (Komatsu Forest [2], 2011): product development, product maintenance, control system development, production and assembly techniques, technical documentation, prototypes, standards & legislation, and quality assurance.

Looking at the history of the company, we observe that it has been complex: knowledge transmission must have been a key element in order to maintain a high level of expertise and improve the place in the market. In addition, although Komatsu Forest is a worldwide company, the headquarters is in Umeå: we were therefore able to study all the aspects we needed from Umeå. We had access to the key departments for our study: marketing, product planning, R&D and distribution.

5.2 Vision, objectives and values of Komatsu Forest

5.2.1 Vision and objectives

The vision of Komatsu Forest is to combine the forestry knowledge and expertise of Valmet together with the standards for quality of Komatsu, in order to cover a wide range of forestry needs. Since 2004 and the acquisition of Valmet by Komatsu the company has been strengthening its commitment to the forestry business, improving the quality of its product, building a stronger network so as to offer a better service to its customers, increasing the R&D resources and focusing more on the customers (Komatsu Forest [1], 2011).
The central objective of Komatsu Forest is to become “the forestry specialist with the best quality and strongest customer focus” (Komatsu Forest [1], 2011). This objective can be achieved only through the fulfillment of the following aims:
- Offering quality in every aspect
- Fostering high product performance
- Setting the forest machine standard
- Better understanding the customer needs
- Constantly improving the existing products

We can therefore notice that Komatsu Forest mainly focuses on two main areas: the quality of its products and the customer. The company claims that it has a strong customer orientation, which is for Komatsu Forest the way to succeed in the forestry machinery market.

Another important preoccupation of Komatsu Forest is environmental consideration. The company believes that environment is a prerequisite for profitability in the long run. The factory in Umeå is certified ISO 14001. The environmental considerations can be also observed in the products: design optimizing mobility to limit the damage to the forest, machines built to reduce fuel consumption and emissions, hoses, filters and pumps optimized for biodegradable oils (komatsuforest.com).

5.2.2 Values

Komatsu Forest has centered its three main values around the support of its promise: offering forestry quality. The firm believes that it can only fulfill its promise by developing the three following values inside the organization (Komatsu Forest [1], 2011).

- **Passion for technology**
  Through its passion for technology, Komatsu Forest aims at developing machines that will be able to endure tough weather working conditions in different parts of the world. It requires passion and technological innovation. It is also a way for them to strive for high performance and continuous improvement. Technology also has to serve the highest possible productivity and performance, which are central requirements of forestry professionals. The technology should enable the best combination between power, reliability and productivity (Komatsu Forest [1], 2011).

- **Business understanding**
  In the forestry industry is at great importance to understand that every minute for a professional is either profitable or costly. Understanding business means to listen and learn about customers’ needs and to transform what the company learns into valuable inputs. Komatsu Forest wants to be built long-term relationships with its customers and collaborate with them in order to find the best solutions (Komatsu Forest [1], 2011).

- **Forestry focus**
  Being focused on forestry, means for Komatsu Forest to use its specialized knowledge of forestry and engineering technology in order to set the standard of the industry. Forestry has to be a passion for the employees in order to develop knowledge and a commitment that are very difficult to copy and which make of Komatsu Forest a unique partner for its customers (Komatsu Forest [1], 2011).
When we look at these three core values, we can notice that it is very important for Komatsu Forest to collaborate with its customers and to develop offerings that will perfectly match their requirements. The role of knowledge is also stated as being strategic for Komatsu Forest, as it enables the firm to develop and improve products that perfectly combine reliability, performance and profitability. This is the ultimate value that Komatsu Forest is striving for.

5.3 Komatsu Forest’s product and the market of forest machinery

In order the reader to understand what is at stake, why knowledge is important and what can influence the orientation of the company and the relationship with the customer, we will present more deeply the products, the markets, the customers and the competitors of Komatsu Forest.

5.3.1 The products

The forestry machines aim at cutting the trees according to two different methods (cut-to-length and full-length) and transporting the trunks (see figure 16).

![Figure 16. Machines for both cut-to-length and full-length methods](source: Komatsu Forest [2], 2011)

Basically, Komatsu Forest provides its customers with two kinds of products: harvesters (in order to cut the trees) and forwarders (in order to transport the trunks). Since 1961, the products have led to successive innovations for the forest industry and have evolved
in order to bring sustainable productivity, ergonomics and profitable logging: the current range of products is really highly technological (komatsuforest.com).

In order to cut the trees, two kinds of machines exist: wheeled harvesters and tracked harvesters & feller-bunchers. The machines can have different kinds of harvesting and felling heads.

These machines are highly technological and possess a control and information system with has a supporting software. It enables to get advanced machine control, provides decision support for operators, maximizes timber value, and provides good production follow-up.

We observe that products are really high-tech and require a high amount of knowledge.

5.3.2 The market

The whole market represent around 3 000 to 4 000 machines sold every year (Näsman, 2011) and the turnover of Komatsu Forest in 2009 represent € 221million (Komatsu Forest [2], 2011). The biggest markets are Sweden, Finland and Germany. The target group is quite small; consequently the company can have close relationships with its customers. For example, in Norway, 520 forest machines bought by entrepreneurs are registered. Komatsu operates on business markets and generally, the customers in Norway are companies composed of one owner and two machine operators. Hence, there are a total of 1560 persons to communicate, which is quite small: that’s why for example no commercials on TV would be useful. On the other hand, in Brazil for example the forest companies are really big (Näsman, 2011).

An important consideration is that the market is segmented. The machines sold in different markets are not always the same: some are more advanced than others depending on the maturity level of it (Näsman, 2011).

5.3.3 The customers

The size of the market shows to us that the customers are not too numerous; it is therefore easier to have close relationships with them. In the same line, it would not be too difficult to try get more information about them in order to know them more.

The customers have a clear age structure: they are usually either old or young and 99% are men. Consequently, the communication is changing: while the older customers prefer face-to face and close relationships, the younger ones prefer YouTube and modern promotional clothes. The customers are usually acting as mechanics by themselves. They buy the forest machines either via a salesperson from one of the sales companies, either via a dealer. Regarding the sales process, the customers usually change the machine every year or two years (Näsman, 2011).

In addition, it is important to precise that the customers of the machines do not use the machines just during a part of their workday but all day long: consequently, they can have some knowledge to share.
5.3.4 The competitors

Komatsu Forest is the second largest manufacturer of forestry machines in the world. It is established in all important forestry markets (Komatsu Forest [2], 2011). It has three main competitors: John Deere that is American company but has a subsidiary in Finland, Ponsse that is Finnish, and Rottne that is Swedish. The difference between the different brands is the service and the behavior of the brand. The quality of all these companies is quite similar because quality is a prerequisite for a firm to sell its machines. Consequently, the companies have to focus on other things to differentiate themselves, like for example the distance to the shop. Komatsu Forest also tries to create long-term relationships with its customers (Näsman, 2011).

One of the problematic for Komatsu Forest is to know if the dealers behave correctly. In order to know that, Komatsu Forest does lots of marketing researches. It tries to get the customer input after the delivery and organizes workshops related to customer input (Näsman, 2011). This marketing initiatives show the willingness of Komatsu Forest to satisfy its customers on order to develop close relationships with them.

The next part of our research will be to investigate how the firm is using knowledge from their customers and how formal practices can be implemented in order to increase the value of the firm’s offerings. We will first expose all the empirical data collected thanks to the interviews we have conducted at Komatsu Forest before proceeding to the analysis.
Chapter 6: CKM IN PRACTICE

We will now present the data that we collected during the four interviews. We have transcribed all of them and we keep them available if needed. We have divided our presentation into five parts, which are closely related to our literature review and to our interview structure.

First, we will describe the role of each of the interviewee in the company and present how he or she sees the role of knowledge in his or her job. Second, we will see if Komatsu Forest is a market-oriented company and how it can be demonstrated. Third, we will describe how knowledge is treated at Komatsu Forest and how is treated the information related to customers. Fourth, we will explain the product development process of Komatsu Forest and see where the customer is integrated in the process. Finally, we will show how the interviewees evaluated the different CKM practices that could be implemented at Komatsu Forest.

6.1 The interviewees and their role at Komatsu Forest

In the practical method chapter, we have explained our choice of interviewees; we will know introduce their roles within Komatsu Forest more precisely.

6.1.1 The market analyst

The market analyst belongs to the marketing department at Komatsu. For precision, the marketing department is composed of five persons: two marketing managers, a responsible for pricing, a responsible for communication and advertising and a market analyst. Her role in the organization is to scrutinize the market and to make forecasts for the coming years. It involves for her to keep track on what is going on through the reading of newspapers or magazines, and to transfer the information when it is required, i.e. if someone needs it: “I keep track of what is going on in the business, what the competitors do, and about new inventions”. This activity was not performed formally before. She entered the company in 2005, as there was no market analyst at Komatsu Forest. The other part of her job is to make forecasts for the different markets in which Komatsu Forest is active. Hence, she has a lot of contacts with the sales companies and also with the customers. Since she is in close contact with the market, she could give us a clear idea of the orientation of the company, which is essential to understand CKM inside Komatsu Forest.

6.1.2 The technology manager

He is responsible for the technical part of the R&D department of Komatsu Forest and has under his responsibility three technical leaders, each of them being responsible for three main parts of their main kind of forest machineries, which are called “cut to length” machines. These three parts are: the harvester, the forwarder and the attachment. The technical leaders are specialists in their own field and when Komatsu Forest undertakes a project, the technical leaders will have the responsibility for the technical part. Hence, he has the overall responsibility for the technical development of the project: “the R&D department imagines a solution and checks with the key-customers if
it responds to what they want.” This kind of interaction is repeated during the project whenever it is necessary. He has been working for 24 years at Komatsu Forest and has therefore a deep knowledge of the firm’s processes: he could therefore explain to us how a product is developed to see when and how the customer is integrated in order to see what are the potential current uses of CKM.

6.1.3 The salesman

We have interviewed one of the nine salesmen working for the sales company Komatsu Forest Sweden. He entered Komatsu Forest in 1985 as a technical manager and has also worked as a product manager during two years. He decided changing orientation in 2003 to become a salesperson in order to have more contacts with customers and be more on the field. His job consists in visiting customers in order to offer machines. He is also the link between the customers and the product developers. He brings information and knowledge coming from the customer, which is then collected by the product managers: “I have a lot of contact with customers and with the factory since I have been here for many years. So I transfer information about what we need”. Given his technical background, he is able to argue about the products and bring valuable knowledge about the products. Being a salesman, he knows very well the customers and could help us to define the relationship between the customers and Komatsu Forest and also to identify some CKM practices.

6.1.4 The product planning manager

He is one of the three product planning managers: he is responsible for the harvesters at Komatsu Forest since September 2005. His main role is to be the market/customer voice into the company: “this is kind of my main role to be the markets voice to the management”. His job consists in two major parts: preparing decisions of new models development and improving already existing models. Concerning the preparation for decision of new models, he is in charge of the marketing part of the pre-study through the gathering of information about market specifications and pricing. At the end of the pre-study, He presents the results to the board meeting that will decide if the project will be pursued by Komatsu Forest or not. He also deals with the improvement of existing model through product maintenance. He explained to us that the customer is integrated in the product development processes: “For product improvements, we of course try to use the opinion of customers. We also involve customers when we are developing products in order to evaluate things on the new machines.” As a product planning manager, he could explain clearly the development process of new or existing products so that we could understand when and how the customer is integrated and how CKM is used. He is the one who is assessing, selecting and studying ideas coming from the customers collected by the salesmen.

6.2 Komatsu Forest’s market orientation

One part of the interviews was dedicated to understand Komatsu Forest’s orientation. All the interviewees agree on the fact that Komatsu Forest has a market orientation and focus increasingly on customers: and they demonstrated it. To begin with, the creation of the position of market analyst five years ago, demonstrates that Komatsu Forest is scrutinizing the market and adapts its strategy according to the market’s evolution.
Before the recruitment of the market analyst, this kind of work was of course performed but nobody was doing it full-time and the activity of reading newspapers and magazines was not formally organized.

In addition, we can also observe the market orientation of Komatsu Forest in the tasks of the product planning managers when they realize the pre-study of projects. When analyzing a new idea related to the improvement of an existing product or to the development of a new one, the product planning manager takes into consideration all the data originating from the market. If an idea is seen as having a good potential for the improvement or development of a product, he will therefore gather information related to the market in order to provide the senior management with the necessary material to make the right decision. What’s more, new ideas generally come from the market itself, with employees who are in constant contact with customers transmitting the information inside the organization: as said by the market analyst, “many ideas come from the customers”.

We have also learnt that beyond the sales representatives of Komatsu Forest, other employees are visiting customers. For example, the market analyst and the product planning managers often go to meet customers themselves and get direct information from primary sources. Customers are thus not only in contact with the sales representative of Komatsu Forest but are also visited on their working place by the employees supporting the development of products. The participation in fairs, conferences and exhibitions is also seen as being important by all of the interviewees.

To sum up with the market orientation, it is something that clearly appears in Komatsu Forest’s presentation. What’s more, through the interviews, we notice that it is put into practice: the creation of a market analyst position, the input from the market used during a pre-study or the continuous contact of different employees with the market are proof of it.

6.3 Knowledge Management and treatment of information related to customers

All of the interviewees recognize the importance of knowledge: acquire it and share it. Through the interviews, we tried to understand how it was concretely conveyed. The communication inside Komatsu Forest is both formal, through planned meetings and the use of a database, and informal, during coffee breaks for example.

6.3.1 Acquisition of knowledge via trainings

All the interviewees answered that trainings and workshops were important inside Komatsu Forest. The trainings and workshops are made in order to be sure that they will have the required competences and capacities to realize the project. However, the reasons and the frequency are different according to the job positions. The salesmen have for example specific sales trainings each time a new product is marketed. These sales trainings last generally a couple of days but it depends on the kind of products: a training for a harvester will be longer than one for a forwarder, since the machine is more complex. The product planning managers follow a training once a year about
various topics by their own initiative and supported by another company. Consequently, we observe that acquiring knowledge via trainings is common and appreciated by the interviewees: they see a clear usefulness in them.

6.3.2 Sharing knowledge inside Komatsu

All of the interviewees explained that they have regular meetings with the other departments: again, the frequency and the reasons depend on the job nature of the interviewee. They generally work a lot in cross-functional teams.

The marketing department is composed of five persons: two marketing managers (one more strategic and one more operational), a responsible for the communication, a responsible for the pricing and a market analyst. Within the marketing department the interactions are frequent and both formal and informal. The market analyst has lots of meetings with the other departments when she has to present the results of a marketing study and the updated annual market shares. She also participates in some meetings concerning product developments when she needs it. At the same time, she has even more contacts with the different sales companies around the world than with the other departments. Indeed, she needs information to accomplish her job of market information research. When the market analyst presents a marketing research about the products, she always invites sales companies, product managers and also the quality department to see if they have the fair picture. Indeed, if she sees the same complaint coming from different customers, then she needs to ask the sales companies if they had lots of complaints about this element. Then she has to ask the quality department if they got lots of reports about this problem. Finally she can tell the product department or the material planners that this component is weak and presents some problems.

The nine Swedish salesmen also have meetings with other departments, more especially with the product managers from the factory (technical leaders) to discuss the future products in details: they can bring the knowledge they get from the customers.

The R&D department and the product planning managers have lots of interactions together but also with the other departments. Indeed, in order to realize successfully a pre-study, all the inputs coming from all the departments are necessary in order to assess the potential of a new product development; consequently, the project has to be cross-functional. The marketing department and the salesperson have to understand the customers’ requirements, convey it to the R&D departments, which will have to realize the pre-study. The senior management will then have the necessary material to make a business decision.

Each product planning manager has six meetings each year per product he is responsible for, in order to decide the new product development with other departments. For clarification, in the product planning department, there are one product planning head and three different product planning managers: one in charge of the harvesters, one in charge of the forwarders and control system, and one for special projects. In these meetings, people from different departments can be involved, depending on the issue that has to be treated:
- the head of the product planning department
- the head marketing department
- three people from the R&D department: the technical leader, the technology manager and the R&D manager
- the sourcing department
- the spare part department
- the production department.

In addition, product planning managers have other meetings to discuss and decide minor upgrades of the product or a change in the regulation for instance.

Komatsu Forest has a database where employees can share files in each department. It is an online platform with limited access depending on the job title: for example, in the marketing department, there are four different levels of access. There are also shared points between the different departments.

Then, there is also a database where the employees and sales managers from all the sales companies can suggest product ideas. If a technician from the R&D department has a new idea concerning a feature that should be added or changed in a product, he can write it in the database. The salespersons can as well put the ideas they have got or deduced from the customers. The product planning managers can then check this database to assess the potential of the ideas and select some that they think it is worth to deepen.

Nevertheless, there is not yet a software, called generally customer relationship management systems, in which it is possible to enter all the information about the customers (such as sales volumes, last purchase…etc). Komatsu Forest is working at this moment on this kind of software enabling to gather information about each customer: they have begun to use it but on a small scale. He added that this practice will be a necessity in the future and will probably be generalized.

To sum up, knowledge has an important role inside Komatsu Forest. The employees participate regularly in trainings or workshops. Cross-functional projects and interfuctional cooperation are predominant and well-established. In addition, having a shared database shows the importance given to knowledge. The project of CRM development is also a proof of this increasing attention given to knowledge (and to customers).

6.4 Product development process and integration of customers

Our aim here is again to make kind of a diagnosis of the current practices at Komatsu Forest in terms of integration of the customers and therefore CKM. That’s why, we have tried to get first a clear understanding of the product development process and then understand when the customer intervenes.

6.4.1 The product development process

The development of a product at Komatsu is accomplished through a project that is conducted during eighteen to twenty-four months. It concerns both incremental and radical innovations, which generally starts when a problem or a trend has been detected by the marketing department or by the end-user. Then it is the role of the product manager to investigate the problem or trend. There are three different product managers, each of them responsible for different products or projects, as previously explained. When the product manager investigates the problem or trend, he carries out a pre-study
that will reveal if it will be transformed into a project or not. Here, different considerations are gathered: the technical feasibility, the costs, the required resources, what the competitors are doing, and the risks related to the project.

Once the pre-study is done, the senior management will indicate if a project has to be created or not. If the project is not validated, the senior management can also ask for a review. If we look at the last product improvements, the recent trend has been that the customers ask for productivity improvements and costs reduction. What is at stake for Komatsu is indeed to reduce the price per cubic of wood for the end-users, which is the way for the firm to get an edge above its competitors.

For every project, there is a project manager that will carry the responsibility of the project during its implementation. The project manager has to select the engineers he needs to develop the project, in which the technical leaders take care of the technical side. They have to combine the different inputs that will contribute to the project: legislation, marketing, competitors, end-users, quality. Besides the technical part, it is also very important for the leader to manage the human resources necessary to achieve the project.

6.4.2 The integration of the customers in the product development process

Customers are generally integrated to new product development and to product improvement projects. In many cases, it is even because of their complaints or observations, reported either by a salesperson (via the shared database) or in marketing research, that a product improvement is launched. It is generally during the pre-study that the customers are being asked to participate in the projects. The R&D department imagines a solution and checks with the key-customers if the solution responds to what they want. This kind of interaction is repeated during the project whenever it is necessary. The integration of customers also depends on the kind of projects. The customers can have good ideas about the function and sometimes about the technical solutions. However, it is the R&D department that will come up with a precise solution and evaluate its feasibility.

When key-customers are involved in a project there is of course a non-disclosure agreement. They are generally involved in important projects that last between 18 and 24 months. The integration of customers and the utilization of their knowledge can also take different forms at Komatsu Forest. First, product managers organize forums where customers are invited to take part in, when there is a need for it. For example, it can be done in order to verify if a solution imagined by the firm really meet the customer’s requirements. As we said, it is often done during the pre-study, when it is important to set strong basis for the project to be successful. In addition, it is very often that products are tested at a customer’s site before being launched. Komatsu Forest has close relationships close to Umea with some entrepreneurs: they can also come to test when something new is developed. These customers are more than a haphazardly customer but they are not hired by Komatsu Forest. The collaborative relationships that Komatsu Forest has with its customers allow a very good integration. They even sometimes help to sell more machines.

We present in the next page the mapping of two key processes (see figure 17 and figure 18). We have used a flow chart BPM (Business Process Management) in order to map
the project development process that we described before and as well the idea generation/selection process, which is the basis of a project.

Figure 17. The generation and selection of idea at Komatsu Forest

Figure 18. The project development process at Komatsu Forest
To conclude this part, we have noticed that Komatsu Forest keeps up close relationships with its customers who are integrated several times during the product development process. We see that CKM is used and we will analyze the empirical data deeper in the next chapter dedicated to the discussion.

**6.5 Opinions of the interviewees about the five best CKM practices**

Until now in this chapter (and in the first part of all the interviews), we have looked at the current practices at Komatsu Forest in terms of orientation, knowledge management and customer integration in order to draw a picture of what is happening today related to CKM.

The present and last part of this chapter (and of all the interviews) is aiming at investigating which formal CKM practices enabling to integrate the knowledge from customers could be implemented.

To serve this purpose, we have introduced and explained to each of our interviewees the five best CKM practices identified through the literature review. We have introduced them one after another and asked the interviewees how they evaluated each of them after each presentation.

More precisely, for each practice, after asking them if they had understood the method, we asked them if the method already existed at Komatsu Forest. Then we asked them if they thought it could be implemented to get their overall reaction and we also tried to know which limits and advantages they could see.

We have summarized below the answers of the four interviewees in five tables corresponding to the five best practices:

- table 11: interaction model
- table 12: focus group
- table 13: community of practice
- table 14: online community
- table 15: lead-users project

In the tables, we have created several columns in order to have a clear vision of the answers to better exploit them. The first column indicates the position of the interviewee. The second column indicates the answer about the existence of the method. Then we have a column summarizing the opinion of the interviewee: the overall reaction and more precisely the limits and advantages. Finally, we have added a column “comments” because some of the interviewees were sometimes comparing a practice introduced with some other similar current practices. Some boxes are just completed by “Nil” when no information was provided by the interviewees.

We will now go through the answers obtained for each practice. To help the reader understanding the answers collected, we will remind briefly the nature of each practice, already developed more deeply in the literature review.

**6.5.1 The interaction model**

6.5.1.1 Reminder of the method

In the interaction model, the acquisition of knowledge is done when the salesperson interacts with the customer. The customer brings knowledge directly to the salesperson.
The knowledge acquired can be from and about the customer: it is generally knowledge concerning his needs, the market, and the competitors. Overall it does not need many resources. It requires a well-trained salesperson because they have to bring the topic, and also you will need to convince them. A system where the salesperson can upload the new knowledge meetings with other departments on a regular basis is also necessary. It is also a good way to identify which customers are really knowledgeable (Garcia-Murillo & Hannabi, 2003).

6.5.1.2 The answers
The table 11 below summarizes the answers about the first best practice. All the interviewees think the first practice called interaction model is applied and see it as positive. Nevertheless, this practice is applied but not really formally and systematically. It seems to happen quite haphazardly.

Table 11. Interaction Model Summary

<table>
<thead>
<tr>
<th>Interviewee’s Job</th>
<th>Already existing?</th>
<th>Overall Reaction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Analyst</td>
<td>Yes probably, but not her area.</td>
<td>Positive</td>
<td>They have different systems to report.</td>
</tr>
<tr>
<td>Technology Manager</td>
<td>Yes</td>
<td>Positive</td>
<td>Information/knowledge got from the customer by the sales.</td>
</tr>
<tr>
<td>Product Planning Manager</td>
<td>Yes</td>
<td>Positive</td>
<td>He controls the ideas coming into the system.</td>
</tr>
<tr>
<td>Salesman</td>
<td>Yes, he is doing it himself but rather informally</td>
<td>Positive</td>
<td>They have a software where they can write new ideas coming from the market.</td>
</tr>
</tbody>
</table>

We observe that each interviewee has a different role in the use of this model, except the market analyst who usually does not use it. While the salesman is usually the one reporting the ideas coming from the market in the system, the product planning manager is the one checking and assessing the ideas collected in the database, and the technology manager use the ideas selected by the this latest to realize the pre-study.

6.5.2 Customer Focus Group

6.5.2.1 Reminder of the method
In this process knowledgeable customers are invited to take part into a workshop with other customers where they can interact with each others. It is a formal process: the customers know why they come. The objective is to get knowledge from them. A
skilled employee has to lead the debate and is the facilitator: he has to make the customers interact on pre-selected topic so as to favor the exchange of information and knowledge between customers (Hanson and Thorson, 2003).

6.5.2.2 The answers
The table 12 presents the answers of the interviewees concerning this practice.

Table 12. Focus Group Summary

<table>
<thead>
<tr>
<th>Interviewee’s Job</th>
<th>Already existing?</th>
<th>Overall Reaction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Advantages</td>
<td>Limits</td>
</tr>
<tr>
<td>Market Analyst</td>
<td>We do not do that when we have a product problem. But the salespersons have to gather information about customers (it is an informal process) and make it available: then I can collect it.</td>
<td>Positive</td>
<td>They already used focus group but it was to understand what customers think when they go to a workshop.</td>
</tr>
<tr>
<td>Technology Manager</td>
<td>Not exactly.</td>
<td>Positive</td>
<td>It is already something that Komatsu is doing through the organizations of forums with customers that are hold by the product managers. It is the product managers that are organizing such events.</td>
</tr>
<tr>
<td>Product Planning Manager</td>
<td>Similar practice, with focus on specific problems.</td>
<td>Positive</td>
<td>A skillful person to lead the discussion is needed because it can easily go into a direction we don’t want.</td>
</tr>
<tr>
<td>Salesman</td>
<td>Yes, they invite customers and discuss different improvements that have to be done with the products.</td>
<td>Positive</td>
<td>It is generally not in groups. It can be with people from the forest company in groups but generally it is more a single customer.</td>
</tr>
</tbody>
</table>

This practice only got favorable reactions from the interviewees Komatsu Forest has already used customer focus groups but not precisely for the purpose we describe. Focus groups have been used to understand what customers think when they go to workshops. They have also been used when specific problems were encountered. It also happens that they invite customers to discuss improvements that have to be done in the
products but it is generally not in groups: even if they can gather people from the company in groups, they usually do not do that with the customers. They also used kind other methods in order to interact with the customers: the product managers sometimes organize forums with customers.

The first limit raised by one of the interviewee was about the control of the debate: selecting a really skilled facilitator to lead the debate is one condition of the success of this method. The second limit evoked by an interviewee was the disposition of internal resources.

To sum up, even if focus groups and some methods aiming at creating interactions with the customers have been used, customer focus groups have never been implemented for the purpose of CKM.

6.5.3 Communities of practice including customers

6.5.3.1 Reminder of the method
This method is similar to the focus group, except that it does not only gather customers but other outside experts or consultants. Internal engineers can also be invited. An interaction is therefore created between these customers and some experts in a domain in which the company wants to find out knowledge. It aims at creating knowledge through the interaction of experts with different backgrounds. It also requires a skilled facilitator and well-defined practices to be analyzed (Wenger, 2004; Oborn & Dawson, 2010).

6.5.3.2 The answers
The idea of creating Communities of Practice (CoPs) has received a positive feedback from the interviewees when we presented it. The answers are summarized in the table 13 above.

We have noticed that Komatsu Forest has already used similar practices: it has been said that it can be fruitful to get the knowledge obtained by the interaction between the engineers and the customers. For example, they sometimes invite customers or other firms, such as a supplier, in order to interact with an internal expert. Komatsu also has the possibility to meet and communicate with different experts and customers at forums and conventions that are organized by groups of interests, or sometimes universities. It can also be theme-days with a focus on a special topic. Hence, Komatsu participates in communities similar to communities of practice but do not organize them.

The main limit evoked concerning this practice is the internal resources.

To sum up, this practice has been seen really positively. The interviewees have seen advantages in creating this interaction: the proof is that they already tried to create this kind of interactions. Nevertheless, the availability of sufficient internal resources is a limit to be considered.
### Table 13. Community of practice

<table>
<thead>
<tr>
<th>Interviewee’s Job</th>
<th>Already existing?</th>
<th>Overall Reaction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Advantages</td>
<td>Limits</td>
</tr>
<tr>
<td>Market Analyst</td>
<td>Not sure because it is not her area. She knows that some customers come here when not a clear idea of an improvement.</td>
<td>Positive</td>
<td>Nil</td>
</tr>
<tr>
<td>Technology Manager</td>
<td>Not exactly.</td>
<td>Positive</td>
<td></td>
</tr>
<tr>
<td>Product Planning Manager</td>
<td>Not exactly. Similar practices with internal experts and customers, but not with external consultants and not formally organized.</td>
<td>Positive</td>
<td>It could be of value for the firm to undertake such a project.</td>
</tr>
<tr>
<td>Salesman</td>
<td>Not exactly. They have similar practices where they invite other firms, for example suppliers, and also some customers, but not together.</td>
<td>Positive</td>
<td>It is good that we have the knowledge from the engineers and from the customers together.</td>
</tr>
</tbody>
</table>

#### 6.5.4 Online Community

**6.5.4.1 Reminder of the method**

Dedicated to customers of a specific product or company, an online community enables a flow of information between customers with each other or with the firm, which can then be converted into knowledge by the firm (Paterson, 2011, p. 45). The aim is to create an online community where customers can log in and exchange information with each other about specific practices.

**6.5.4.2 The answers**

This method got positive reactions from all the interviewees and is not yet applied (answers summarized in the table 14). If we compare to the other methods, it was certainly the practice that the interviewees discussed the most: it shows the interest they
have in it. Even if we can detect a bit of fear, certainly because of the unknown, all the interviewees showed a real conviction that this method constitutes the future; especially with the arrival of the new generation of customers who are much younger and more interested in internet. They have seen in this method a useful tool for Komatsu Forest in order to learn from its customers and also to communicate with them.

This practice is not used by Komatsu Forest even if the interviewees compared it to some current practices or attempts. Indeed, first we learnt that customers already use online forums called “Skogsforum” but it is not administered by Komatsu Forest. The marketing department even thought of going on these forums, introducing themselves as Komatsu Forest employees to talk directly to the customers. Therefore, we see that the idea of online communication with the customers is already in some people’s minds inside the company, especially in the marketing and product planning departments.

Aiming at developing their internet communication with their customers, Komatsu Forest has implemented the possibility for each customer to create a personal profile on the website of Komatsu Forest. On this website, they have the possibility to describe the machines they possess in order to get a personal service advice and they can also post some videos that can be seen by the other customers. They have the possibility to send emails to the company but not to really chat with the other customers. This measure has not been so successful, certainly because this idea was not so attractive for the customers, and not because they are not willing to use internet since at the same time they post videos on youtube. We deduce once again, that Komatsu Forest has the willingness to develop on internet and the customers seem ready since they are already using “Skogsforum” and youtube.

Nevertheless, some limits have been raised: the need to control the information and the resources required by such an initiative. Indeed, someone would need to manage the community and answer the questions, and this person could maybe not be able to answer all of them. Another limit is that even if the younger generation is arriving, for now there are still older contractors who would not want to use the internet.

To sum up, all the interviewees were convinced that online communities would be essential in the future with the development of the internet and the arrival of the new young generations of contractors. Besides, Komatsu Forest has already tried to follow this trend and made some attempts to develop on the internet.
### Table 14. Online Community

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Job</th>
<th>Already existing?</th>
<th>Overall Reaction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advantages</td>
<td>Limits</td>
</tr>
<tr>
<td>Market Analyst</td>
<td>Not exactly.</td>
<td>Positive but how to do that?</td>
<td>- Need to control the information - How to do that?</td>
<td>- They tried to develop a personal space for each customer on their website where they can download videos and send mails but not really successful. Difficulty to attract them. They prefer youtube. - Customers are already on specific forums called &quot;Skogsforum&quot; (not only their customers): Komatsu Forest has discussed the possibility to go to these forums and talk to the customers. - The competitors are not so active on internet (Johan Deere is doing something but it is such a big company, it is maybe not about forest equipment).</td>
</tr>
<tr>
<td>Technology Manager</td>
<td>Not exactly.</td>
<td>Positive</td>
<td>Necessary to first consider the cost associated with managing it. For example, there might be too many demands from customers that would require extra works for the personal.</td>
<td>There already exists online communities with forums on forest machines where people can exchange information, but which are not held by Komatsu.</td>
</tr>
<tr>
<td>Product Planning Manager</td>
<td>No</td>
<td>Positive</td>
<td>- He thinks it is a very useful tool. - They could learn from their customers, but also to build up their image and shows that they are a customer oriented company. - It is a very good tool to inform all your customers what you are improving, what services you can offer to them.</td>
<td>- Anyway, the information can be stopped, it will be out there anyway, but it is better if it is controled. - &quot;I strongly believe in this&quot;. - It could be done in a near future: &quot;to some extent I think we are somehow conservative, but I wish we will do this as soon as possible because it is a good tool&quot;.</td>
</tr>
<tr>
<td>Salesman</td>
<td>No</td>
<td>Positive</td>
<td>- Some things need to be cleared up: resources again, because somebody will be needed to keep track of this and manage it. - It is very easily that it turns the wrong way, and that customers start to talk about problems they have, which they will do anyway. It means that someone is needed who will answer and inform them about what the company has done to solve their problem.</td>
<td>- Cultural barrier between people from the north and the south. - There are a lot of the contractors who are older and do not want to use the computers at 60 years old.</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>
6.5.5 The lead-users approach

6.5.5.1 Reminder of the method
The first step is to select the lead-users. Lead-users are users that are experts in a field and really knowledgeable. They have high interest in improving the product and will be willing to help the company (Von Hippel, Churchill & Sonnack, 2009, p. 7). It is the most developed technique which aims at making the customers as innovators (Eisenberg, 2011, p. 50). Instead of having just an interface with them, the company integrates them from the right beginning of a project and work with them all along (Von Hippel and Thomke, 2005, p. 7).

6.5.5.2 The answers
This method is the one that was the most controversial among the interviewees (see table 15 below): we have clearly seen a division of opinion. While it was seen really positively by the market analyst and the product planning, it was seen more negatively by the technology manager and the salesman.

The two interviewees who most recently arrived in the company really saw potential in this method. The market analyst explained to us that the Japanese owning the company have a really strong vision about the relationships with the customers: they consider that the employees should really go to meet the customers as much as possible. Thereby she thought that this kind of practice was in line with this vision and that it could be well considered by them. With this method, the product planning manager saw the opportunity to give a good input to the projects in order to develop better products and also an opportunity to build the brand. On the other hand, the technology manager saw this method as probably useful for certain kinds of projects. He explained that lead users are already used to some extent: their opinion is sometimes asked and they collaborate on a specific part of a project with a non-disclosure agreement.

Some limits, not negligible have been raised during the interviews. The first limit is the concern of the resources needed: customers would have to come frequently to the headquarters. The biggest and global limit evoked is that it would require courage to implement this method. Indeed, while the product planning manager does not see any limits to have the lead-users in the company, the salesman thinks that a limit has to be respected between the customer and the company. He thinks that the innovators are not supposed to be the customers in the first place: even if some good ideas can come from the field, most of the ideas should come from the company.

To conclude, the input from lead-users is already used to some extent but lead-users are not fully integrated as members of the project teams. This practice divided the opinions: while the two more marketing oriented interviewees saw a real value in it, the two other interviewees saw more limits, especially the salesman who thought that a boundary has to be respected with the customer.
### Table 15. Lead-users project

<table>
<thead>
<tr>
<th>Interviewee’s Job</th>
<th>Already existing?</th>
<th>Overall Reaction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market Analyst</strong></td>
<td>No, the customers are not here during the meetings with product developers and quality department.</td>
<td>Positive</td>
<td>Komatsu uses lead-users to some degrees, usually they are asked for their opinion, but they are not team-members of a project. They get involved in the project when Komatsu asked them to collaborate on a specific part of the project, with non-disclosure agreement.</td>
</tr>
<tr>
<td><strong>Technology Manager</strong></td>
<td>Not exactly.</td>
<td>Positive, depends on the project</td>
<td>Lead-users projects could be implemented depending on the type of projects.</td>
</tr>
<tr>
<td><strong>Product Planning Manager</strong></td>
<td>Not, but discussions have started</td>
<td>Positive</td>
<td>- It is mainly positive.</td>
</tr>
<tr>
<td><strong>Salesman</strong></td>
<td>No</td>
<td>Rather negative</td>
<td>You need to cut a limit between the firm and the customer.</td>
</tr>
</tbody>
</table>

#### Advantages
- Would not necessarily require extra resources
- The senior manager could agree on it. The Japanese think that they should go out to the customers to observe what they do. The principle could attract them because it is in line with their visions. Being close to the customers is already in everybody's mind. The customer is necessary.

#### Limits
Nil

6.6 Summary of the empirical chapter

The purpose of this chapter was to summarize the empirical data obtained through the interviewees we conducted in order to be able to analyze the data afterwards. In this chapter, we have observed that Komatsu Forest’s actions seem to reveal a market orientation: they are open towards the market in order to be aware of what is going on and to take the right decisions.
Moreover, Komatsu Forest seems to give importance to knowledge: we can see that through different facts like the trainings frequency and the cooperation between departments via the projects or via the shared database. Going through the new product development process enabled us to determine where the customer is integrated and consequently when and how the knowledge of the customer is used. After this observation of the reality at Komatsu Forest, we have collected the opinions of the interviewees about five best CKM practices. Although all the practices are not used within Komatsu Forest, all the practices got positive opinions except the heaviest one, the lead-users project, which was more disputed. On the whole, all the practices were given advantages and limits except for the simplest one, the interaction model, which did not collect any limits.

We will now move to the analysis of this empirical data.
Chapter 7: DISCUSSION

After summarizing the empirical data, we will now look at them through theoretical eyes. We will analyze them thanks to the theory provided with the literature review. We will start by discussing the market orientation of Komatsu Forest before going through its knowledge management. Then we will discuss the current CKM practices thanks to the observation of the customer integration during the new product development process. Finally, we will analyze the opinions of the interviewees about the five best CKM practices identified in order to see which of them could be implemented and how.

7.1 From a market to a customer orientation

Through the description of the firm’s practices and processes, we observe that Komatsu Forest not only considers itself as market oriented, but also that this orientation is expressed in practice. Kohli and Jaworski (1990, p. 3) had described a market orientation as “the organization wide generation, dissemination, and responsiveness to market intelligence”. We can use the previous definition to see if Komatsu Forest answers to these criteria:

- **Intelligence generation:** at Komatsu Forest, we observe that a big attention is given to the market. Without even talking about marketing research that we can consider as basic, we can observe that the implementation of a market analyst position five years ago shows the preoccupation of the management for the market. The market analyst at Komatsu Forest reads everyday what is happening in the industry and is every day in contact with the sales companies disseminated throughout the world. Another example is the inputs the salesmen get from the customers with whom they have close relationships. Moreover, the participation in fairs, conferences and exhibitions points out Komatsu Forest’s efforts to communicate with the different actors of the forest machinery industry.

- **Intelligence dissemination:** When the market analyst hears for example about a recurrent problem with the product, she tries to find out the reason and then explains to the directly involved colleagues the problem in order to fix it. When for instance a sales person has a product idea coming from a customer, he or she can write it in a shared database that will then be checked out by the product planning managers. We have also observed through the interviews that the meetings between different departments are common and numerous, so that the knowledge can be disseminated quite easily.

- **Responsiveness:** With the marketing research results and the inputs received from the sales companies and the salespersons, projects are created to respond to the customers’ needs. In addition, we understood through the interview of the product planning manager that important decisions are never made without consideration of the market and often include customers’ opinions, regarding to their requirements and preferences.

Through this analysis, we see that intelligence knowledge becomes a resource and the right attitude is adopted so as to reach a market orientation.

We can then observe that the market orientation has been reinforced overtime to evolve towards a customer orientation. As we have seen in the literature review, firms that have
shifted from a market-orientation towards a customer-orientation are those that are getting closer to their customers with the objective to better understand their requirements and preferences (Day, 1994, p. 40). We have seen through our study that it is actually happening at Komatsu Forest. Indeed, we learnt from the study that the willingness to be close to the customers is a fact and is increasing: they consider that the customer is necessary and is the key to success. That’s why Komatsu Forest tries to develop its relationship with its customers. An example is the possibility offered to the customers to create a personal profile on the website of Komatsu Forest: with this profile they can post videos and also get access to specific services depending on the kind of machines they have (see part 6.5.4 chapter 6).

According to Nakata and Zhu (2006, p. 323), it is through the combination of human resources, organizational resources and technological resources that firms will succeed in being customer oriented: it appears to be the case for Komatsu Forest. Concerning human resources, a position of market analyst has been created and employees are supposed to visit often the customers. Linking human resources and organizational resources, we have observed that the customer participates a lot during the new product process and no big decision is made without the customer’s opinion. The shared database utilized to gather information and knowledge and the efforts to be on the internet show that technological resources are used.

In addition to the software used to report the ideas generated by the customers and reported by the salesmen, Komatsu Forest has started for some months to work on a software where the information about each customer could be stored (see part 6.3.2 chapter 6). According to the theory, we can qualify this kind of software as a CRM system (customer relationship management): it is a step further in the realization of a customer oriented company. Gebert et al. (2003, p. 109) consider that CRM processes are “knowledge-oriented processes” and point out three main knowledge flows: about customers, for customers, and from customers. While the knowledge from customers collected by the salesmen and the marketing research is commonly stored and used in a specific software, the knowledge about and for customers were not usually stored: this is a reason why the current CRM project of Komatsu Forest is a progress in the customer orientation and demonstrates the development of the customer knowledge management. Concerning the integration of the knowledge coming from customers, the next step will be to implement concretely formal processes in order to acquire and create the knowledge. As Day stated (2000, p .12): “more important is knowing how to acquire, select and interpret information so it becomes useable knowledge, and then creating an environment, which increases the willingness of individuals to freely share their specialized knowledge”. We will develop the possibilities of implementing such processes after our analysis of how knowledge is treated at Komatsu Forest. Nonetheless, it is worth noticing that it takes a long time to achieve that and the firm needs to plan and be prepared ahead for it.
7.2 Knowledge Management at Komatsu Forest

Our study clearly showed us that knowledge is considered as being important at Komatsu Forest. If we look back at our literature review, we have seen that there are two main schools of thoughts: one arguing that the primary role of the firm is to integrate and coordinate knowledge inside the organization (Spender, 1996; Grant, 1996), and the other one pointing out that it is the creation of knowledge that has to be emphasized by the firm (Nonaka, 1994). These two main views of knowledge management do not have to be seen as opposed, but rather as being complementary. It is what we could notice at Komatsu Forest: there are efforts of the firm to both coordinate the existing knowledge and to create new knowledge.

We can first notice the importance of trainings for Komatsu Forest’s employees, which is for them a common way to acquire new knowledge. When a new product is being launched on the market, salespersons have trainings in order to acquire the necessary knowledge on that product. We assume that training is a way for Komatsu Forest both to coordinate knowledge inside the organization, and to create new knowledge. Indeed, training is a good occasion for a firm to coordinate knowledge between the different departments, and to create new one through the interactions between people. As a matter of fact, trainings are very good socialization and externalization tools, which lead to the creation of new knowledge and to create new knowledge (Nonaka, 1994, p. 19).

The software of Komatsu Forest used to convey information and knowledge originating from the market. It is a very good example of a firm taking care to coordinate knowledge internally (Grant, 1996). Everyone in the firm can have access to this database and there are some employees – the product managers – responsible for organizing the knowledge brought into the database. However, the software can also be seen as a tool made to create new knowledge inside Komatsu. The knowledge that is inserted into the database is an explicit knowledge: information of the market has been analyzed and treated by an employee, and has then been converted into knowledge. The database will then enable a combination of different knowledge, which leads to the creation of new knowledge (Nonaka, 1994, p. 19). For example, the product manager can detect complementary knowledge originating from different departments that have to be combined in order to create new knowledge, which will be transformed into new value through the creation and implementation of a project.

The projects implemented at Komatsu Forest are also encouraging the creation of new knowledge. The pre-study for example, realized by the product managers, is made in order to gather and combine inputs from different sources. Among the different kinds of inputs, knowledge plays a critical role, which is line with Drucker’s view on the importance of knowledge (Drucker, 2001). It is through the combination of knowledge that it will be possible for the firm to decide whether to implement an idea related to products development or improvement, or not. The creation of knowledge is particularly developed at Komatsu Forest when we look at the regular cross-functional meetings that organized in order to combine knowledge from different departments. The vision of Nonaka (1994, 1996) about knowledge creation is therefore adopted at Komatsu Forest. The inclusion of customers to some meetings also demonstrates that Komatsu Forest has already undertaken some actions towards the management of knowledge from their customers.
Our analysis shows that Komatsu Forest is a company that has sensed the importance to manage efficiently its knowledge and fosters the constant creation of new knowledge in order to match the requirements of its customers. There is therefore an existing strong basis for the formal implementation of CKM practices in the future. We will see more in details our analysis of the current practices at Komatsu Forest in terms of customer knowledge management and what can be done in the future in the next two parts.

7.3 Current CKM practices at Komatsu Forest

After a discussion about the firm’s orientation and its way of treating knowledge, we need to make a diagnosis of the current practices in order to be able to investigate afterwards which formal CKM practices can be implemented by Komatsu Forest.

Through the description of Komatsu Forest’s customer orientation and the product development process in the empirical data chapter, we have understood that the customer has an important role at Komatsu Forest. From these observations and the theory, we will analyze Komatsu Forest’ current CKM practices.

As we said, knowledge is one of the most important inputs in today marketplace. The knowledge that a firm possesses can come from and refer to various sources such as employees, suppliers, products, industry, competitors, operations or customers (Garcia-Murillo & Hannabi, 2003, p. 876). Knowledge from customers can be - and have to be - used by firms. Customers are “a new source of competence for the corporation” and that competence “is a function of the knowledge and skills they possess, their willingness to learn and experiment, and their ability to engage in an active dialogue” (Prahalad & Ramaswamy, 2000, p. 80). On a competitive market and with such technological products, Komatsu Forest needs to have close relationships with its customers in order to be sure that its offerings will provide its customers with value. Therefore, the customers are regularly integrated to the projects of Komatsu Forest, whose inputs are valuable for the firm to create value.

The customer is highly integrated into the firm’s projects. CKM is about “gaining, sharing, and expanding the knowledge residing in customers, to both customer and corporate benefit” (Gibbert et al., 2002, p. 2). From the study, we can see that knowledge from customers (CKM according to Gibbert et al, 2002) is used by Komatsu Forest when:
- Employees meet customers on their working site and interact with them.
- Employees fill in the database with information and knowledge coming from customers.
- They meet with customers during fairs, exhibitions or conferences.
- Customers are contacted and invited at Komatsu Forest in order to give their opinions about a product.
- Products are tested at customers’ working sites.

From these observations and the CKM definition, we can deduce that CKM is currently used. In the literature review, we have learnt that among the different sources of knowledge, researchers have pointed out that the customer has been poorly considered (Garcia-Murillo & Hannabi, 2003, Prahalad & Ramaswamy, 2000). In the present case, even if the knowledge from customers is used, we think that it is not optimized. What
we have seen is that there is not a formal management of knowledge from customers at Komatsu Forest. It is rather done when it is needed, quite spontaneously, or by opportunity when an employee sees haphazardly that one customer possesses a specific knowledge, which could be used by the firm.

According to Prahalad and Ramaswamy (2000, p. 83), companies have to “understand the purpose, the meaning, and quality of the dialogue from the customer’s perspective and to find ways to process what they learn from customers so they can bring the dialogue forward and keep the customer’s interest”. During the interviews we have noticed that employees in contact with customers or whose job requires inputs from customers are convinced that customers are valuable knowledge asset for Komatsu Forest. Therefore, we believe that Komatsu Forest is on the way to achieve the above process described by Prahalad & Ramaswamy: Komatsu Forest is aware of the knowledge quality inherent to its customers and has a shared database to collect it. Nevertheless, we believe that Komatsu Forest does not bring enough “the dialogue forward” and does not keep enough the “customer’s interest”. As said by Gibbert et al. (2002, p. 2): “CKM is the strategic process by which cutting edge companies emancipate their customers from passive recipients of products and services, to empowerment as knowledge partners”.

To sum up, we can argue that there is a real need and interest for Komatsu Forest at using knowledge from its customers. However, most of the best practices we have identified are not formally implemented by the firm. We hope that our coming discussion about the possible implementation of these practices at Komatsu Forest will help the firm to improve its processes related to the use of customers’ inputs.

7.4 Discussion about the 5 best practices

Now that we have developed an understanding of the current situation at Komatsu Forest, we will be able to discuss the potential implementation of the 5 best CKM practices identified previously. To achieve this, we will use the theory provided in the literature review to analyze the empirical data. We will cross the data we collected when we asked to the interviewees their opinions about each practice (see chapter 6: table 11, 12, 13, 14 and 15) with Komatsu Forest’s documentation that could be relevant in this context (see chapter 6).

7.4.1 Interaction Model

On the whole, this practice is applied but not consciously and maybe not as systematically as it could be (see table 11). Garcia-Murillo and Hannabi explain that the interaction model is made up of three stages (2003, p. 879-880): knowledge revealing, knowledge sorting and knowledge leveling. In order to see if this model is used by Komatsu, we can try to apply it on the data we got.

- Knowledge revealing implies that it is the role of the salesperson to not only answer questions but also to guide the interaction. At Komatsu Forest, it is in everybody’s mind that the customer is the key for success, as seen in the first analysis part about market orientation. Thereby, the salesmen are supposed to be aware of that and to be alert when they meet the customers, but it was said
implicitly more than explicitly. We understood that this kind of behavior can happen but it is not systematic.

- Knowledge sorting means that the exchange is encouraged by a very well-trained salesperson able to interpret it. Since the salesmen have developed close relationships with the customers, it is easier to get knowledge from them. However, we have not observed any special training towards this very aim.
- Knowledge leveling refers to the documentation of the input. Knowledge leveling is totally used at Komatsu Forest: there is a shared database where product ideas can be suggested and stored before being reviewed by the product planning managers. Salespeople always use this database when a customer suggests a new idea.

We deduce that the interaction model is partly used. Indeed, even if the salespeople are aware of the key importance of the customers, have close relationship with them and can document the knowledge in an internal shared database, some characteristics of the interaction model are absent. First, as seen in the literature review, it is critical that the salespeople be well trained as they will be the recipient of the knowledge. Every interaction with the customer will generate an experience that has to be personalized and will encourage the customer to share what he knows (Prahalad & Ramaswamy, 2000, p. 86). However there is no special training to teach the salespeople how to guide the interaction. Secondly, Garcia-Murillo and Hannabi (2003, p. 875) have stated that the “objective is for the salesperson to be the collector of knowledge from customers and then use that knowledge to help other customers”. At Komatsu Forest, the salespeople do not systematically look for knowledge each time they meet the customer.

To sum up, this model is not implemented formally in the sense that it is not written in a procedure and it is not asked directly to all the salespersons. Nevertheless, even if it not applied formally, we can deduce that it is in the values and culture of the company and in people’s mind. Garcia-Murillo and Hannabi (2003, p. 883) have explained that the knowledge sharing process between the company and the customer is a way to strengthen their relationship, which must be more and more collaborative. According to Garcia-Murillo and Hannabi (2000, p. 81), to be better than its competitors in terms of relationship is a competitive advantage, especially in competitive markets. Consequently, our recommendation is to communicate more with the sales companies around the world in order to make sure that this practice becomes systematic, and not just occasional.

7.4.2 Customer Focus Groups

We observe via the table 12, that this practice has never been applied in the way it is described in the literature review.

According to Bristol and Fern “Focus-group interviews involve an interactive discussion of specifics topics by a small group of individuals guided by a moderator” (2003, p. 435). The idea at Komatsu Forest would be to use this method, not just in the case of a problem, but to use it on a regular basis. The topics would be selected by the company depending on its ambitions in terms of innovation. In customer focus group, the small group of individuals is composed by selected customers and by the moderator, who is a representative of the firm (Hanson & Thorson, 2003, p. 2).
After defining clear objectives (Hanson & Thorson, 2003, p. 3), a challenge is to select a highly skilled facilitator (BPIR, 2006). This importance has been raised during an interview when the fear to lose control on the debate has been evoked. Having a skillful facilitator is a condition to the success of this method. The facilitator will then have to select, contact and convince the users that have been identified as being the most appropriate for the project (Hanson & Thorson, 2003, p. 4). Selecting knowledgeable customers is crucial. However, at Komatsu Forest, the interaction model, generating close relationship between salesmen and customers is already partly used; therefore it would not be too difficult for the firm to succeed in this step.

We would like to go back to an important limit evoked during an interview about the internal resources. Indeed, some customers will have to be selected and brought to the headquarters and if we consider that the markets and the products are different in each country, customers from different countries would be needed. Our recommendation is to start only with Swedish customers because it will be less costly. This method is relatively easy to undertake and the result may be obtained promptly (Hanson & Thorson, 2003, p.2; BPIR, 2006): the success of this first try will give the arguments to allocate more resources on this practice and expand this method with other markets. We know that, even if it is in Sweden, this focus group will generate some costs, mainly composed by the transportation costs of the customers to the headquarters (then the facilitator will take care of them during the day and the costs should not be so high): in addition, the customer is generally not paid for that. Harhoff, Henkel and von Hippel have shown in a study that information transfers without any monetary compensation are frequent and can be called voluntary information spillovers (2003, p. 1767). This study was concerning specific high tech industries but we think that Komatsu Forest’ machines are similar to them: consequently, the users could be certainly up to freely share. Given the close relationships Komatsu Forest has with the customers, the participants should be just happy to help, honored by this demand, and satisfy if an innovation is created thanks to them. Besides, we have already seen through the interviews that when an idea coming from a customer is adopted by Komatsu Forest, the customer feels generally happy and satisfied that he was heard and contributed to an effective innovation: this reaction is due to an extrinsic stimulus, called signal competence that motivates the user (Kaiser & Müller-Seitz, 2008, p. 213-215).

An important asset of this method is that social interactions may generate new knowledge and not just acquisition of knowledge such as in the interaction method (Hanson & Thorson, 2003, p.2; BPIR, 2006), therefore it could really provide Komatsu Forest with interesting development ideas. We believe that if to start, this method is applied as we recommend it, the costs would not represent such a high expenditure for Komatsu Forest, especially considering the expected returns it can generate. In addition, since Komatsu Forest has already used focus groups for other purpose, it has some experiences to rely on.

7.4.3 Communities of Practice

Communities of practice have been defined by Etienne Wenger as “groups of people who share a passion for something that they know how to do, and who interact regularly in order to learn how to do it better” (2004, p. 2). Even if Komatsu Forest has never used this exact practice (see table 13), it has used quite similar methods with the same
objective (forums and conventions). It shows that there is a need for it and the interest of the interviewees for CoPs has been clearly demonstrated during the interviews.

However, Communities of Practice requires a rather high amount of resources (see table 6 in the literature review). Indeed, as we stated in the literature review, for CKM purposes CoPs need a good preparation from the firm, with for example a facilitator who is in charge of the organization. Hence, the decision to go for the implementation will involve a deep evaluation of the benefits on one side, and of the requirements on the other side. When looking at the literature and at the interviews, there is no doubt that CoPs would bring value to Komatsu Forest. Communities of practice (CoPs) have been recognized as being an important platform for learning and have shown interesting results (Oborn & Dawson, 2010, p. 843). The point is rather to know if it would bring more value than it will cost. There are two main kinds of resources that the firm will have to evaluate when considering to implement CoPs: human resources and financial resources.

It is first important to be sure that Komatsu Forest has a skilful employee who is able to organize and lead such a project. This kind of person is called a facilitator: he or she has to make everything easy for the people who will be part of the community. Indeed, the experts who will work together need to form a real community, which means that they will develop relationships between each other, enabling them to solve common problems and to share knowledge (Wenger, 2004, p. 3). Customers are also integrated in this practice of course (suggested by Gibbert et al., 2002, p. 10). Given that Komatsu Forest has close relationships with its customers it should not be too hard and costly to select and to convince them (see in the previous part about customer focus groups the voluntary information spillovers (Harhoff et al., 2003, p. 1767)).

In addition, among the members of the community there are generally internal experts (Oborn & Dawson, 2010, p. 854) who will be the voice of Komatsu Forest. Hence, the firm will have to be sure that it possesses such experts internally and know how much it would cost to make them taking part in the project.

Besides, to include various experts with diverse backgrounds has been shown to broaden the outcomes in terms of knowledge creation (Oborn & Dawson, 2010, p. 854). Consequently, Komatsu Forest will have to invite external experts, such as consultants, which venues represent a cost for the firm.

Therefore, our recommendation concerning the possible implementation of Communities of Practice at Komatsu Forest will be the following. Communities of Practice will for sure bring value to Komatsu Forest, as it is a firm that needs knowledge from its customers and that has collaborative relationships with its stakeholders. Yet, the first step to undertake will be to evaluate the value that could be brought to the customers thanks to the implementation of a CoP, on one side. On the other side, as we mentioned it, Komatsu Forest will have to know the requirements linked to the implementation of a CoP. In addition, the firm will have to consider the repercussions on its brand image, which will probably be positive if the CoP is properly managed. It will demonstrate to the customers that Komatsu Forest is undertaking concrete actions in order to deliver them with better offerings, which can certainly become a competitive advantage. It is only after this first necessary stage that it will be possible to state whether it is strategically wise or not to implement this practice.
7.4.4 Building online customer communities

All the interviewees were convinced that this practice constitutes the future in the sense that it will become necessary. Already in 2000, Prahalad and Ramaswamy (2000, p. 86) had predicted the increasing use of online communities and by the same way the increasing use of internet by the companies. The Internet enables a better connectivity between the different actors involved in the innovation process of the firm (Jeppesen & Frederiksen, 2006, p. 45). From the empirical data collected (see table 14), we observe that the idea of online communication with the customers is already in some people's minds inside the company, especially in the marketing and product planning departments (suggestion of going to “Skogsforum”). We also deduce that Komatsu Forest has the willingness to develop on internet (development of the personal space on Komatsu Forest’s website). Prahalad and Ramaswamy had also stated that customers are more and more active in the marketplace, especially with the rise of the Internet over the last ten years. By observing the empirical data, this statement seems to be true in the case of the forest industry: the customers are using “Skogsforum” and YouTube. These facts make us think that Komatsu Forest’s employees and customer are ready for the implementation of an online community.

As explained in the literature review, online communities provide both the customers and the company with advantages. Indeed, firms can become closer to their customers, increase the customer loyalty and increase the customer satisfaction since it can enable the firm to better understand what creates value for the customer (Paterson, 2011, p. 46-47). It has been recognized during the interviews that an online community could help learning from customers, to build up a good image among customers and to affirm a firm’s customer orientation. Dedicated to customers of a specific product or company, an online community enables a flow of information between customers with each other or with the firm, which can then be converted into knowledge by the firm (Paterson, 2011, p. 45). A precision to add is that knowledge sharing has two dimensions in online communities: co-consumption (knowledge distributed to other members of the community) and co-production (knowledge given to the producer to increase the efficiency of the product) (Wu & Sokoco, 2010, p. 12). Co-production would be useful for Komatsu Forest, in the sense that it could use this knowledge to improve its market offering. Both co-consumption and co-production could also be a way to identify the knowledgeable customers, for instance to implement customer focus groups.

The main limits that can be deduced from the interviewees are about forest industry habits, the management of the flow of information (control and needed resources) and how concretely attract the customers.

First, even if Paterson (2011, p. 44) argues that many companies have succeeded in developing and managing online communities, where customers can interact with each other and share their knowledge, this method is not common in the forest industry. The proof is that it is not used by any competitor. Creating online communities would constitute a huge step ahead for Komatsu Forest. This method is also very modern and would imply an innovative view of the relationship with the customers. To conclude, this method would need to convince the conservative oppositions that could prevent its implementation.
In addition, it is a true challenge to manage the flow of information in such a community. The firm will have to manage the customer diversity in terms of knowledge, which can be seen either as a difficulty or as an opportunity to create richer interactions (Prahalad & Ramaswamy, 2000, p. 87).

Indeed, there is a risk that discussions about some problems rapidly flow and give a bag image of Komatsu Forest. At the same time, as it has been raised during an interview, if it happens that there are actually problems about some machines, the information will be out anyway. For Komatsu Forest, having a direct access to this information would constitute an asset, because the community is managed by someone inside. Indeed, it would enable the firm to be aware of what is said in order to manage it in a desired way and it would enable to react quickly.

To correctly manage the flow of information, Paterson (2011, p. 50) argues that there is a need to control the content being exchanged in the community. Accordingly, this practice implies someone to manage and control it, and to answer all the questions. It will therefore beget extra resources. This person could be from the marketing department but it will be impossible for him or her to answer all the questions if it concerns technical aspects. This person would then be responsible for reallocating the questions to the right persons in the company. A process has to be found inside the company to enable to make it work; and it is possible. In addition, since right now lots of customers still belong to the old generation, the number of members should not be so high at the beginning but it will increase overtime. The practice will therefore be implemented softly while the younger generation arrives slowly. It will certainly happen that at one point a new employee will be needed to take care of this project: at that moment, Komatsu Forest will have had the time to see all the advantages of this method and to invest or not. As the function of market analyst has been created five years ago, conveying the increasing market orientation of Komatsu Forest, a new function designed to manage the online community could be created in the future, conveying the increasing customer orientation.

Finally, the last limit is about how to attract customers. Indeed, Komatsu Forest had a first endeavor to develop a personal space for its customers and it did not work. The difference here is that with the online community, people can interact and it represents a lot. We have seen in the literature review that customers are attracted by online communities for the following reasons: the value of content that is exchanged by the community members, the need for sociability of the participants and the service and support that customers can get in their community (Paterson, 2011, p. 48).

Besides, in order to make this practice successful, there are some ways to attract the customer. Wu and Sokoco (2010, p. 17) have explained in a study that the two key determinants for members of online communities to share knowledge and have favorable behavioral intentions (characteristics of trust) towards the brand community are achievement and power motives. Hence, for example, Wu and Sokoco (2010, p. 17) advice the company to reveal some exclusive information about the future products to the active members. This is in line with an advice of Paterson (2011, p. 50) to promote the participation through rewards for the most active members. We think that providing the members with some exclusive information about the new Komatsu Forest’s products could be a way to motivate and interest them. Another recommendation is to create a place in the community where members can discuss about a topic unrelated to the
general area of the community (Paterson, 2011, p. 50). This subject has to be discussed and chosen by Komatsu Forest because they know what the customers are concerned about: an example could be the environmental laws. Some rules already presented in the literature should be respected in order to optimize the efficiency of such a community (Paterson, 2011, p. 50):

- Facilitating the possibility to ask questions to a specific department of the firm to maximize the actual exchange of knowledge.
- Encourage to create reviews about the company product that can be published online.

This method constitutes an investment but it will be certainly essential in the future. We have understood that since products in the forest industry are all of high quality, companies have to differentiate themselves through other criteria like services or proximity. Implementing an online community would obviously enable Komatsu Forest to get closer to its clients. Even if this method can be copied by the competitors, having the advantage of being the first company implementing it would obviously be an asset for Komatsu Forest. It will show the concern they have to be close to their clients in order to answer adequately to their needs.

7.4.5 The lead-users approach

While this method is the most advanced and elaborated (Von Hippel et al., 2009, p. 12) when it comes to integrating knowledge from customers, it is also the heaviest method in terms of expenditure, time and mind changes inside organizations.

A limit that has been evoked during the interviews is again about the resources (see table 15). Allocating enough time to the project, which last four months in average, is a real necessity and challenge (Von Hippel et al., 2009, p. 8). It will require the firm to be perfectly organized and to employ people that have experience in managing long processes (Eisenberg, 2011, p. 57). We understand that for Komatsu Forest, it will represent a big investment.

The main limit is about changing a company’s mentality. It is the most revolutionary in the sense that the customer becomes entirely an innovator since he becomes a member of the projects (Eisenberg, 2011, p. 50). It directly involves the knowledge from customers into the new product development process of a firm, which can either lead to an incremental or a radical innovation (Von Hippel & Thomke, 2005, p. 7). This concern was the main limit evoked during the interviews (see table 15). We see that letting the customer be part of product projects is far from being easy since it requires first to be accepted in everybody’s mind within Komatsu Forest. A challenge pointed out by Eisenberg is to stay humble during the whole process and to remain open-minded to new solutions brought by the customers for the firm not to exclude valuable solutions to quickly (Eisenberg, 2011, p. 57). Indeed it is not an obvious and common idea to let the customers being included in internal projects and it is not easy to admit that he or she is so much needed. While we have seen more propensities among the “more marketed oriented” interviewees, the method was seen a bit more negatively elsewhere. As pointed by the product planning manager interviewed, this method would require being brave enough to put this into the budget and effectively starting to work with it.
To conclude, a successful implementation of this method requires appropriate management support, careful team selection and sufficient time to allow insights to develop (Eisenberg, 2011, p. 57). Considering the big investment implied by this method, we believe that it should be implemented when all the success factors would have been brought together. This analysis leads us to think that if this method has to be implemented at Komatsu Forest, it should be in the long-run, after some other methods presented before are effectively implemented and accepted.

7. 5 Theoretical contribution of the study

In this chapter we have mainly focused on the empirical contribution of this study, as it is directly related to a practical case-study. However, based on our observation and on the literature review we performed, we will now try to bring our own contribution to the theory.

Looking at our analysis of the present situation concerning the implementation of CKM practices at Komatsu Forest, we can point out that for the moment CKM is essentially used informally by the employees. It appears that CKM is practiced at Komatsu Forest more because there is an existing need for it rather than because the senior management of the company has decided to implement formally CKM practices. It is therefore more a bottom-up movement than a top-down impulse. Hence, the objective of our study can be seen through the perspective of moving from this bottom-up reaction to a top-down impulse coming from the management. We can notice that it already happened with the market orientation of Komatsu Forest, which is a prerequisite for the implementation of CKM practices. Indeed, before the creation of the function of market analyst, market scrutinizing and analysis was performed rather informally by Komatsu Forest. We can assume that activities related to market analysis were increasingly done at Komatsu Forest since there was an increasing need for it, and that then the management decided to formalize these activities through the creation of a clear function within the organization.

We can thus see the development of a firm’s orientation, both internal and external, through the succession of two central stages:

- The informal – or bottom-up - answer to a new orientation, for example the development of knowledge management or customer orientation in a firm.
- The formal – or top-down – implementation of practices related to the new orientation of the firm.

If we take back the model at the beginning of the literature review, we can develop it further, as we did in the figure 19. We have been assisting for the last thirty years to the development of the firm’s internal and external orientation. According to our readings and to our research, we now believe that such evolutions are possible only if there is first a need for it, and then a formal implementation of practices, processes and behaviors related to an evolution. Most companies, including Komatsu Forest, have evolved in their orientation through the two main stages we mentioned: the bottom-up answer and then the top-down impulse.

We state that the development of CKM is the next evolution in firms’ orientation, and that most firms concerned by CKM are between the first and the second stage. That is to say that the need for managing knowledge from customers clearly exists, but that for the
moment there is only an informal and unstructured answer to that need. The fact that some authors recently started to point out the potential of using knowledge from customers and the scarcity of literature about the possible practices to implement, confirm our statement.

![Figure 19. The development of CKM through two main stages](image)

The above figure illustrates the two stages necessary for a firm to evolve towards a new orientation. The use of knowledge coming from customers is a new source for companies to increase the value of their offerings. Most companies are now certainly aware of this potential and have already started to react informally. They are therefore between the two stages and have to move forward through the implementation of formal practices.

In addition, we can also notice that the types of knowledge generated or acquired through the implementation of a practice will be different from one practice to another. Indeed, the Interaction Model will enable a firm to acquire knowledge about customers’
needs, about the market and also about the competitors. It will generally not be technical knowledge and it can be rather general. Customer Focus Groups will favor the acquisition and creation of knowledge about customer’s needs and practices when using the product and about the product itself. The types of knowledge can be technical, especially when it is knowledge about the product. Communities of Practice rather aim at creating technical knowledge about the product through the interaction of experts on specific practices. A common practice is generally a good way for practitioners to interact freely on a technical subject. Online communities will enable the firm to acquire knowledge about customers’ needs, about the market and about the product. The interaction between customers will also make the creation of new knowledge possible. The lead-user approach is generally used to create new knowledge about products, because this practice is used when developing new products. It will thus be generally technical knowledge. It can also be knowledge about customers’ needs, which can be identified by the firm when interacting with customers.

The different practices can therefore be used for different purposes and can overlap with each other. We think that future research will be required to shed light on the different possible combination and how the different practices can match with each other.

Future research will also be needed in order to better understand how to move from the information reaction to the formal implementation stages, and when to do it. Research on the benefit of formal implementations should also be carried out in order to demonstrate the value of formally structuring a new orientation.
Chapter 8: CONCLUSIONS

8.1 The findings

After the analysis of all the collected data, we are now able to answer our research question.

*How can Komatsu Forest integrate knowledge from its customers in order to increase the value of its market offerings?*

First, we have found out through our case study research that Komatsu Forest is actually already using informally some methods aiming at integrating knowledge from its customers, as we pointed it out in the theoretical contribution part. The company is therefore between the two stages, the informal reaction and the formal implementation of CKM practices. Secondly, our study has shown that Komatsu Forest is ready to implement formal CKM practices and to structure this evolution. Indeed, the current informal CKM practices, the increasing customer orientation, the CRM implementation and the global way with which knowledge is treated inside the company demonstrate Komatsu Forest’s readiness. However, the implementation can take a long time to be completed and we should also not neglect that the learning process also has to take place inside the organization. That is why we will specify when to implement a practice, and which department is primarily concerned by the practice.

From this basis and after the analysis chapter looking at the empirical data through theoretical lens, we can state that Komatsu Forest has different possibilities to integrate formally knowledge from its customers in the short, medium and long terms in order to increase its market offering. Table 16 presents our recommendations about the formal CKM practices that could be implemented.

Table 16. Recommendations concerning the 5 best practices

<table>
<thead>
<tr>
<th>Existing?</th>
<th>Recommendation elaborated from the analysis</th>
<th>Action</th>
<th>Time</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Interaction Model</strong></td>
<td>Partly Communicate more with the sales companies to implement this model formally.</td>
<td>Now</td>
<td>Marketing, especially the sales division</td>
<td></td>
</tr>
<tr>
<td><strong>Customer Focus Group</strong></td>
<td>Not exactly Use it regularly and start with Swedish customers to limit the first expenditures.</td>
<td>Now</td>
<td>R&amp;D, Marketing</td>
<td></td>
</tr>
<tr>
<td><strong>Community of Practices</strong></td>
<td>No First, undertake a deep evaluation of the benefits on one side, and of the requirements on the other side. Then, according to the results, decide to implement it or not.</td>
<td>Mid-range</td>
<td>R&amp;D, Product Development</td>
<td></td>
</tr>
<tr>
<td><strong>Online community</strong></td>
<td>No Create an online community by following some rules to attract the customers.</td>
<td>Now</td>
<td>Marketing and technical service</td>
<td></td>
</tr>
<tr>
<td><strong>Lead-users projects</strong></td>
<td>No Reinforce the customer orientation and implement other basic CKM practices before undertaking this practice more demanding in resources and in rules.</td>
<td>Long-range</td>
<td>R&amp;D, Product Development</td>
<td></td>
</tr>
</tbody>
</table>
First, the priority for Komatsu Forest is to make sure that the interaction model is applied by all the salespeople in Sweden. It has to be done in short-term, as well as the creation of an online community. Every interviewee believed that it will be necessary soon or later and we think that it is time to start with this project: being the first company in the forest industry doing this would be an asset. It can make a difference for young customers and does not require many resources to be implemented. Furthermore, customer focus groups have been practiced on a regular basis too. We can notice that the generalization of the interaction model and the creation of an online community would be helpful to identify the knowledgeable customers who could participate in focus groups. That’s why it is better to start implementing these three practices in the near future, as it will favor the creation of synergy between the practices and develop the learning process within the organization.

Thereafter, we state that communities of practice are not a priority now and could constitute actions to undertake in the middle run. It is a practice that requires more resources and more preparation, and Komatsu Forest will be more able to implement it successfully once the firm has already gained some experience with the three first practices. Concerning lead-users project, we think that Komatsu Forest should consider using this method in the long run because it will require time and evolution for this method to be applied successfully.

A recommendation is also to be aware that each practice will bring a different kind of knowledge, as we have discussed previously in the theoretical contribution. According to which kind of improvements or knowledge Komatsu Forest wants to acquire, it could decide to emphasize on one or another practice.

Overall, we can conclude by stating that Komatsu Forest has already undertaken some steps in its evolution towards the management of knowledge from its customers. Referring to our theoretical contrition, we assume that the firm is between two important stages and is now ready to structure formally its evolution through the implementation of the CKM practices we mentioned.

8.2 End Notes

8.2.1 The contribution of the study

The results of this case study bring to us to take some detachment and go one step further in our research process. First, through our literature review, we have been able to track the origins of CKM. We have understood that CKM comes from a dual perspective: an internal perspective with the management of resources, capabilities and knowledge and an external perspective with the orientation towards the market and the customers (see figure 3). Then, we have gathered all the CKM practices that provide with a clear and broad understanding of this area, something that we could not find in any article or book. Finally, while quite few concrete research have been conducted to demonstrate the applicability of CKM in specific industries, we have shown through our case study research, that CKM is used informally in the forest machines industry and that it could be used formally.
Our theoretical contribution is based on the development of a new orientation in a firm, with a focus on the development of CKM practices. We have pointed out that a new orientation generally appears when there is first an informal answer to a need for this new orientation, and thereafter a formal impulse in order to formally structure the new orientation. Furthermore, we have also demonstrated that the different practices will enable the creation or acquisition of different kinds of knowledge.

8.2.2 Suggestions for future research

Following the contribution of the study, we can suggest some future research purposes. Indeed, while we have seen that CKM is applied informally in the forest industry and could be applied formally, we have not studied its effective realization and successfulness. Another suggestion would be to compare the efficiency of the different CKM methods.

Besides, while we have studied the CKM possibilities in the forest industry, it would be interesting to analyze this area in other specific industries. While in software companies CKM is used formally and looks even vital for them, it has not been studied in diverse kinds of industry. We can wonder for which kinds of products these CKM practices are efficient. The forest machines, as well as software, are high tech products that require a high amount of knowledge and they are utilized by the customers all day long: we could therefore investigate which characteristic is essential to make CKM relevant. In addition, it will be interesting to investigate the relevance of these practices in business to consumer markets: our study was focusing on the forest industry, which is a business market.

Finally, as we mentioned it in the discussion, future research will be needed on the combinations of the different CKM practices and on the transition between the informal and formal stage during the development of a new orientation.

8.3 Quality criteria

It is now time to test the quality of our research. To do that, we have used the four criteria recommended by Bryman and Bell (Bryman and Bell, 2007, p.411) for qualitative research: credibility, transferability, dependability and confirmability.

8.3.1 Credibility

The credibility of a research refers to the degree to which a study is made according to the recognized research procedures that are used in most researches (Bryman & Bell, 2007, p.414). We have tried to rely as much as we could on authors who are specialists in their own field concerning research procedures. It was a way for us to be sure that our research would be as credible as possible and that we are following clear and recognized procedures. In order to identify the authors and books dedicated to research methodology, we followed the recommendations made in the handbook of Umeå University. Using different sources was also a good way to combine and compare different procedures and to direct our research towards our final objective.

When gathering the empirical data, we were aware about the ethical considerations and about the possible flaws of the generated information. That’s why we have decided to
interview four employees with different positions and who all could be interested by managing knowledge for customers. This is how we dealt with credibility when getting and analyzing the empirical data. We also followed the advices formulated by recognized authors such as Yin (see chapter 4) in order to perform our empirical study.

8.3.2 Transferability

Transferability refers to the extent to which the results of a research can be transferred and used in a similar situation REF. Our research can be divided into two main parts, with two different degree of transferability: the theoretical review and the empirical study, which both rely on a research methodology.

In our literature review, we have shown what the origins of CKM and detailed the five best practices we have identified in order to use knowledge from customers. According to our researches, it has not been done before and we assume that the results of our review can be used by other researchers. We indeed believe that our description of the best practices is not dedicated to a specific industry or market, which makes it transferable to other researches in other industries or companies.

If we look at our empirical research, the findings are specific to Komatsu Forest and have therefore a limited transferability. However, the findings could be used in future researches if it is in an industry or a firm that has similarities with the forest machinery industry or with Komatsu Forest.

8.3.3 Dependability

According to Bryman and Bell (2007, p.414), researchers in qualitative study should pursue an auditing approach. It implies to keep the complete record of the used materials that have leaded us during the resolution of the research question. All of the materials, which include research articles, books, interview transcriptions, brochures and internal documents of Komatsu Forest, can be shared at request.

8.3.4 Confirmability

Confirmability refers to the neutrality and objectivity with which is conducted a research and the interpretations made in the research. We have of course tried to be as much objective as possible when for example gathering and choosing the articles for our review, when deciding which method to adopt, who to interview, how to interview or how to conduct the interview.

We especially paid attention not to let our preconceptions influence our thinking when designing the literature review, which led us to modify its structure several times in order to make it fit with our research objectives. In addition, we tried not to influence the response of the interviewees during our meeting with them and tried to keep the information we received from them without too much interpretations before the analysis. It was important not to have our personal preferences influencing our research (Bryman & Bell, 2007, p.414).
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### Appendix 1

<table>
<thead>
<tr>
<th>Objectives of the interview</th>
<th>Researcher questions</th>
<th>Interviewer questions</th>
</tr>
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<tbody>
<tr>
<td><strong>INTRODUCTION OF THE INTERVIEW AND THANKS</strong></td>
<td></td>
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<tr>
<td><strong>Our presentation:</strong></td>
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<td></td>
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<tr>
<td>Our agenda ppt (with our objectives: see how it is going now and what more could be applied and how)</td>
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</tr>
<tr>
<td>Our study subject: figure ppt + def CKM</td>
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<tr>
<td>Terms of confidentiality</td>
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</tr>
<tr>
<td>Get to know the person and his/her function</td>
<td>What is the interviewee's function at Komatsu and his/her background within the company?</td>
<td>Could you describe us briefly your job? Which tasks do you perform and what does constitute your routine?</td>
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<tr>
<td></td>
<td></td>
<td>How long have been working for Komatsu?</td>
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<td>Have you performed any other function at Komatsu before?</td>
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<td></td>
<td></td>
<td>For product (marketing, R&amp;D) employees: How does the innovation work? How often do you innovate in your product offering? How long does it take?</td>
</tr>
<tr>
<td>Know how the company manage knowledge and how it manages customer related information</td>
<td>Does Komatsu specifically manage knowledge and does it have a CRM system?</td>
<td>Do you think that knowledge plays and important role in your job?</td>
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<td></td>
<td></td>
<td>Do you often have training or workshop at Komatsu?</td>
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<td></td>
<td></td>
<td>Do you often meet with other people from other departments?</td>
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<td></td>
<td>Do you have the feeling that you can learn from other departments?</td>
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<td></td>
<td>How does that influence your job?</td>
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<td></td>
<td>Can you describe us how you exchange information/knowledge inside the firm?</td>
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<tr>
<td></td>
<td></td>
<td>Do you have a computerized system where specific knowledge can be archived?</td>
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<tr>
<td></td>
<td></td>
<td>Do you know if Komatsu have a computerized system with customer-related info?</td>
</tr>
<tr>
<td>Understand the firm's orientation and the potential current use of CKM</td>
<td>How does the interview perceive customer orientation and what is practiced in CKM</td>
<td>How does the customer influence the activities you perform?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Would you say you have a market orientation? If yes, how is it translated concretely? How can we observe that in reality?</td>
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<tr>
<td></td>
<td></td>
<td>Do you think that the role of customers at K. have changed over the time? How?</td>
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<tr>
<td></td>
<td></td>
<td>Do you think that you can learn from customers and how?</td>
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<td></td>
<td>We would like to make an diagnosis of your current practices: how does it work when it happens? Basically: Who, What, Who, When, How?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--&gt; Is it systematic? Is there a procedure or agreement? Who collect it?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How? By phone or face-to-face? Question asked or just observation when visits? Observation on purpose or haphazardly? And how the knowledge is transferred in the company? To who? And then what is happening? Maybe could you try to schematize it?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For the salesperson: with resellers or entrepreneurs, does it work the same?</td>
</tr>
</tbody>
</table>
**INTRODUCTION OF THE CKM PRACTICES ONE AFTER ANOTHER**

<table>
<thead>
<tr>
<th>Question</th>
<th>Follow-up Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be sure that they have understood the method</td>
<td>Would you like to have more details about the method in order to understand it?</td>
</tr>
<tr>
<td>EVALUATE THE POTENTIAL INTEREST IN THE METHOD</td>
<td></td>
</tr>
<tr>
<td>Does the interviewee feel interested for himself and for Komatsu</td>
<td>Do you think that you could personally use this method? For which purposes?</td>
</tr>
<tr>
<td>Do you think that Komatsu could use this method? For which purposes?</td>
<td></td>
</tr>
<tr>
<td>DETERMINE IF THE METHOD COULD BE USED BY KOMATSU AND HOW?</td>
<td></td>
</tr>
<tr>
<td>Could this practice be implemented at Komatsu and with which resources?</td>
<td>If we were presenting this practice to the senior management, would they decide to implement it in your opinion?</td>
</tr>
<tr>
<td></td>
<td>What would be the reasons for implementing it/not implementing it?</td>
</tr>
<tr>
<td></td>
<td>Would it require the acquisition or development of extra resources?</td>
</tr>
</tbody>
</table>

**CONCLUSION AND THANKS**