Knowledge Intermediaries in Successful Knowledge Reuse and Sharing

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Declaration

This material presented in this thesis, except where properly acknowledged and referenced, is, to the best of my knowledge and belief, my own and original work. This thesis has not been submitted in whole, or in part, for the award of a degree or diploma at this or any other university. Research processes used in this thesis were approved by the relevant ethical committee.

[Signature]

Mohammad Reza Behboudi
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Abstract

This thesis presents a case study exploration of knowledge intermediaries. The research focuses primarily on human intermediaries (HIs) and their roles in successful knowledge reuse and sharing. It also investigates knowledge intermediaries in relation to high-value knowledge flows in addition to general knowledge flows.

Knowledge is an important and strategic organizational resource. Many studies have been conducted to understand how organizations can maximize the application and exploitation of knowledge. In this regard, improving knowledge reuse and sharing and understanding the factors that lead to more successful knowledge reuse and sharing are concerns of many organizations and researchers.

The literature indicates that intermediaries are important in successful knowledge reuse, as they influence other factors which have an impact on knowledge reuse. However, intermediaries, their concepts, roles, types have not themselves been extensively investigated and are arguably underappreciated both in practice and theory. These reasons motivate this research. Furthermore, to understand more about different intermediaries, this study focuses on their roles and impacts in knowledge flows that differ in terms of perceived value.

The purpose of the research is to understand how human intermediaries (HIs) can facilitate better and more knowledge reuse and sharing, particularly with respect to high-value knowledge. To meet this purpose, an exploratory, qualitative case study was conducted in a large knowledge-intensive multi-unit law firm in Australia. Interviewing was the main data collection method, but relevant documents and KMSs were reviewed as well. Interview subjects were knowledge users and sharers as well as staff who were involved in facilitating knowledge reuse and sharing.

A conceptual framework to understand the typologies and roles of HIs in successful knowledge reuse and sharing is developed. This contains two typologies for HIs based on the roles they play and the location and characteristics they have in a large multi-unit organization. One of these, the location-oriented typology, classifies HIs into Local HIs, who facilitate knowledge reuse and sharing in a specific unit, and Central HIs, who facilitate knowledge reuse and sharing at the firm-wide level. In this way, the research extends the intermediary component of the knowledge reusability theory of Markus (2001). In facilitating knowledge reuse and sharing, two types of roles for HIs, namely, the knowledge-oriented roles and the technology-oriented roles, are distinguished and, for each of these, a comprehensive list of functions that should be performed by HIs to achieve successful knowledge reuse and sharing are identified. Moreover, an appropriate intermediary type is assigned for each function. Lastly, the research recognizes different flows for high- and low-value knowledge, and identifies appropriate intermediary types for facilitating these flows, essentially finding that Local HIs are more appropriate for high-value knowledge than are IT and Central HIs.
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INTRODUCTION

1.1. Opening Statement

This thesis presents a case study exploration of the typology, roles, and impact of knowledge intermediaries (human and technical) in successful knowledge reuse and sharing in a large multi-unit knowledge-intensive organization. The research was conducted between February 2005 and August 2009, and addressed the primary research question: *How can knowledge reuse and sharing be improved through knowledge intermediaries?* The research places greater emphasis on human intermediaries (HIs) than on technical intermediaries. In addition, the later part of the study concentrates on identifying the most suitable intermediaries for the facilitation of high-value knowledge reuse and sharing.

Knowledge intermediaries, and the relationship of different HIs and different knowledge flows in terms of value have not previously been addressed adequately. Therefore, recognizing and providing typologies and detailed roles and functions of HIs, and identifying appropriate intermediaries for high- and low-value knowledge flows are significant contributions of this study.

In this study, the term knowledge intermediary refers to one or more agents, including a human agent or a technology agent, which facilitates or intermediates, directly or indirectly, explicit and tacit knowledge reuse and sharing in an organization.

This chapter introduces the research. First, it provides a brief background to the study and explains relevant concepts, including knowledge intermediaries, knowledge reuse, and the technical and human intermediaries. The need for research on intermediaries and the gap in the literature is then discussed. This discussion is followed by a brief explanation of the different flows of knowledge in terms of value and their relationship with the technical intermediary, Information Technology (IT). The chapter continues with the research questions, the research objectives and contributions, the research design, and, finally, the organization of the thesis.
1.2. Background to the Research

The nature of competition and sources of competitive advantage in many industries has increasingly moved from tangible resources toward knowledge-based resources. This is evident from the extensive attention paid by practitioners and researchers to Knowledge Management (KM) in the last decade. The matter of better managing a firm's intellectual assets to achieve competitive advantage has received significant attention from researchers including (Argote and Ingram, 2000, Markus, 2001, Watson and Hewett, 2006, Silvi and Cuganesan, 2006, Davenport et al., 1998). The ability to manage and leverage valuable existing internal knowledge through knowledge reuse and sharing has been found to be vital for better performance and competitive advantage. This is because internal organizational knowledge is somehow unique, or at least, scarce, and is important in achieving organizational objectives, whereas creating new knowledge is difficult and expensive (Szulanski, 1996). For companies, sharing knowledge assets through the transfer and reuse of organizational practices is a critical element of competitive advantage (Jensen and Szulanski, 2004). This is particularly the case in knowledge-intensive industries, in which knowledge has emerged as one of a firm's most strategically important resources (Duschek, 2004, Grant and Baden-Fuller, 2004). So, research on the ways to improve knowledge reuse and sharing is valuable research, which is the intention of this study.

This section explains the background to the research as well as the importance of and reasons for conducting this study. First, the importance of knowledge reuse (and sharing) and the factors for improving knowledge reuse are reviewed. Then the concept of intermediaries and their roles in successful knowledge reuse and sharing is considered. After that, the motivation of the study and the gap in the literature are explained. Finally the intermediaries and high-value knowledge is discussed briefly.

1.2.1. Knowledge reuse

One important way of leveraging existing knowledge is through the transfer, sharing and reuse of existing firm-specific knowledge among different individuals or groups within the organization (Watson and Hewett, 2006). Reusing knowledge throughout the organization has been linked to organizational performance through its influence on innovativeness and other competencies (Lindvall et al., 2003, Edvinsson et al., 2004). Knowledge reuse leads to consistency of business operation inside the organization by aligning operations with each other. This in turn increases the likelihood of operation optimizations across the organization (Bruno, 2002).

Knowledge reuse and sharing is associated with some challenges and is not easily achievable. Much of the knowledge that is necessary for an organization's success exists inside the organization, but understanding this, locating such knowledge, and leveraging it is problematic (Alavi and Leidner, 2001). If organizations do not reuse
or apply their important knowledge resources, the problem of the ‘knowing-doing gap’ may occur. This is a common problem which the literature shows and the researcher’s initial pilot study confirms (Behboudi, 2006a, Pfeffer and Sutton, 1999). Therefore, there is a need for organizations to know how to find, share and transfer and make organizational knowledge available for reuse and application to bridge this gap.

There are some different definitions about knowledge reuse. This study defines knowledge reuse as the processes of capturing or documenting, packaging, distributing, and reusing external and internal knowledge, as well as the processes of promoting tacit and explicit knowledge sharing. So, knowledge reuse also incorporates knowledge sharing. Chapter two, section 2.1.4 explains and justifies this definition. In this thesis, the terms knowledge reuse and sharing are generally used together to emphasize both aspects of knowledge reuse.

Many factors have been investigated in the literature on successful knowledge reuse and transfer. These studies have revealed some factors which affect knowledge reuse, but still other issues remain unknown in this regard. The researcher has categorized these factors into three groups, namely, organizational, individual, and knowledge repository factors. Some factors from each category are listed below.

Organizational factors include organization support (Venters, 2004), organizational culture (Lucas and Ogilvie, 2006, Goh, 2002), human resource management (HRM) practices and human resources (Minbaeva, 2005), integration of KM into the processes, and business imperatives (Fischer, 2002, O'Leary, 2001). Individual factors include encouragement (incentives) (Goh, 2002, Markus, 2001), the individual’s characteristics, computer literacy, general domain knowledge, and contextual understanding (Watson and Hewett, 2006, Tsai and Tsai, 2004, Majchrzak et al., 2004). Finally, knowledge repository factors include knowledge management systems (KMSs) design and IT issues (Alavi and Leidner, 2001, Albino et al., 2004, Walczak, 1998), knowledge usefulness (Watson and Hewett, 2006, Szulanski et al., 2004), knowledge characteristics (with metadata, complementary, broad, link to practice) (O'Leary, 2001, Majchrzak et al., 2004, Fischer, 2002) and human and technical intermediaries (Markus, 2001).

After reviewing and analyzing the literature on knowledge reuse factors, the researcher argues that of all the factors, intermediaries are more important because they also have an influence on other factors. Moreover, Markus (2001) in the initial theory of knowledge reusability proposed that one of the major factors for successful knowledge reuse is the human and technical intermediaries. Furthermore, knowledge intermediaries are acknowledged by many authors as important, even critical, to successful knowledge reuse in organizations.
For instance, according to Szulanski (2000), the mere possession of potentially valuable knowledge does not necessarily benefit other parts of the organization. However, by allowing the emergence of knowledge facilitators, practical knowledge for action is produced and shared (Roth, 2003). For successful knowledge reuse, besides creating good repositories and applying incentives, the role of intermediaries is necessary to design and support the repositories to make them usable by others (Markus, 2001).

In spite of these facts, the concept of intermediaries is not known well either in theory or in practice. It is not clear what or who the knowledge intermediaries are and what roles or functions they should play to effect successful knowledge reuse and sharing. As the literature review reveals, there is ambiguity about knowledge intermediaries and the concept is not as well defined as it should be (Behboudi and Hart, 2006). For example, Markus (2001) just drew attention to two general intermediaries, the human intermediary and the technical intermediary. However, Markus (2001) did not elaborate on the concept, nor discuss intermediation or the roles of intermediaries comprehensively, but, instead, raised the need for further research on the intermediary in future study.

Of the two main intermediaries, human and technical (IT), this study concentrates mainly on HIs. While the technical intermediary is acknowledged as an important mediator and enabler of knowledge reuse and sharing, this study place a greater focus on HIs congruent with the claim of Markus (2001) “facilitators and intermediaries play a still underappreciated role in knowledge reuse” (p. 84). There is, therefore, a clear need for further study to understand the different types of human facilitators or intermediaries, their significance, and their different roles and functions in organizational knowledge reuse and sharing. However, the technical intermediary is also considered in examining the roles of intermediaries in high-value knowledge, and in identifying HIs’ functions in knowledge reuse. The next section highlights the importance of intermediaries as well as their unappreciated roles in the literature, which motivates this study.

1.2.2. Knowledge intermediaries and their importance

The existence of intermediaries and their intermediation roles in different areas, whether between organizations or within organizations, is appreciated both in practical businesses and in the literature. They have made significant contributions to many businesses and organizational initiatives and, in some areas, their absence can harm normal business activities and negatively impact on the organizations’ performance. Other than in the context of trade and marketing, in which the broker is a dominant entity, in other areas also the contribution of intermediaries are acknowledged (Khurana, 2002).

In the KM and IS (Information System) discipline, some studies have discussed the importance and the roles of intermediaries. In addition to many studies on the role of the technical intermediary (or Information Technology) in knowledge reuse and sharing, there are also some studies about HIs. Indeed, the emergence of many KM jobs in organizations, where they may, directly or indirectly, facilitate knowledge flows, implies the importance of HIs. However, studies in the literature on HIs mostly have not addressed knowledge reuse and sharing intermediation as a major focus. For the most part, studies on HIs focus on the importance of HIs but do not elaborate on them.

For example, Jones et al (2003) argued that facilitators, such as chief knowledge officers, play the role of change agents, innovators, and opinion leaders to facilitate the acquisition and use of knowledge. Davenport and Prusak (1998) referred very briefly to the knowledge market in organizations, in which one of the players is the broker who connects knowledge buyers to knowledge sellers. Similarly, Roth (2003) argued that, by allowing the emergence of knowledge facilitators, practical knowledge for action is produced and shared. According to Aalbers et al. (2004), knowledge brokers are employees who act as a link between two or more employees for knowledge transfer.

Furthermore, Datta (2007) also identified different intermediary or agent roles for a series of knowledge transformation. In addition, Fennessy and Burstein (2007) studied the role of intermediaries in fulfilling the information needs of healthcare professionals. Also, Pawlowski and Robey (2004) investigated IT professionals as knowledge brokers in facilitating knowledge flows in multi-unit firms.

However, to the knowledge of the researcher, there are few if any, studies which investigate intermediaries in knowledge reuse and sharing in detail. Only Markus (2001) identified and briefly studied intermediaries in knowledge reuse. She (by synthesizing a wide variety of sources) developed a primary theory of knowledge reusability. In this theory she argued that for successful knowledge reuse there are two important prerequisites: technical and human intermediaries, and incentives.

Furthermore, the literature review showed with the exception of Fischer's (2002) pilot study, no empirical or comprehensive research on the role of intermediaries has been conducted. Inspired by the Markus study (2001), the current study explores the
concept of knowledge intermediary and the roles of intermediaries in knowledge reuse and sharing.

As noted above, in this study, the term knowledge intermediary refers to one or more agents, including a human agent or a technology agent, which facilitates or intermediates, directly or indirectly, explicit and tacit knowledge reuse and sharing in an organization. This definition will be explained in chapter two. In this thesis mostly the term "intermediary" is used in preference to "knowledge intermediary".

1.2.3. Motivation of the study: Need for intermediaries and the gap in the literature

As argued above, while intermediaries are acknowledged by many authors as important, even critical, to successful knowledge reuse, relatively little is known about intermediaries in the process of knowledge reuse and sharing. In addition to the importance of intermediaries in knowledge reuse and sharing, three other reasons motivate this study.

First, key researchers in the field, (Davenport and Prusak, 1998, Markus, 2001, Datta, 2007, Fennessy and Burstein, 2007, Pawlowski and Robey, 2004) recognize the underappreciated position and the role of intermediaries both in theory and practice. They recommended future research in this regard. Researching the intermediary in a knowledge-intensive firm is more critical, because these types of firms need effective knowledge reuse and sharing, and the services and contributions of intermediaries more than others. In one study, Southon et al. (2002) revealed some different and even problematic yet important roles for intermediaries in law firms. This thesis attempts to shed light on these issues.

Second, there is ambiguity in the concept of HIs and their roles and functions. They are not illuminated well for practice or in theory. Hence, this thesis seeks to clarify the types and functions of HIs. Third, no studies have been conducted to specifically propose a typology including functions of HIs in knowledge reuse and sharing or their impact on different valued knowledge flows in organizations. This study addresses this need. The rest of this section provides further evidence in this respect.

Some researchers have called for further study of intermediaries. Markus (2001) maintained that, in spite of the importance of intermediaries, the roles of intermediaries in knowledge reuse are underappreciated. The concept of human and technical intermediaries is still not clear, nor are their functions or the way they impact on knowledge reuse. Markus (2001) raised the issue of further research on intermediaries and the role of IT in this intervention as an “important avenue for future IS researchers” (p. 88).
Several studies have noted the failure to acknowledge the importance of intermediaries and the lack of adequate appreciation of their roles. For instance, Davenport and Prusak (1998) criticized the failure of firms to appreciate the role of HIs, specifically librarians. They found that in spite of the essential of intermediaries roles, their status and compensation do not reflect their value to the organization. They acknowledged that brokers are underrated and unappreciated in organizations. Similarly, Du Plessis and du Toit (2006) confirmed the vital and unappreciated role of HIs (librarians) in KM processes.

Moreover, Pawlowski and Robey’s study (2004) argues that the IT professionals’ roles should be reevaluated because their roles are not restricted to designing systems or providing tools for KM processes. One of their roles is knowledge brokering because of the strategic position of IT professionals in knowledge transfer. They called for future research to consider the practice groups or business units rather than just focusing on the possible brokers in organizations which in their case was IT professionals. They suggest that “future research might investigate knowledge brokering from the vantage point of the business units, to whom knowledge was purportedly transferred, rather than relying so heavily upon reports from IT professionals” (p. 665).

Pawlowski and Robey (2004) argued that this will contribute to a better and more complete understanding of the organizational challenges and opportunities presented by knowledge brokering. Therefore, this study responds to this request and considers both potential and actual intermediaries and users or practice groups. More importantly, the focus of this study is on KM teams rather than on IT professionals.

Having emphasized the importance of intermediaries and their critical role in KM, a study by Datta (2007) confirmed that in spite of much research in KM, little attention has been paid to intermediaries in KM:

Prior work on KM mainly emphasized the antecedents and outcomes of knowledge with little reference to key intermediaries in KM. Yet, agents are core to every transformation episode. ... Regardless of whether agents are software or human, agents in KM perform essential brokerage functions to smooth the transition and cycle of knowledge creation and application (p. 305).

In another study, Fennessy and Burstein (2007) argued for the value and importance of intermediaries and maintained that one of the less explored roles for information providers as intermediaries is transforming information into meaningful knowledge. They recommended investment in intermediaries.

Furthermore, previous studies on intermediaries have not fully developed the concept of intermediaries or their roles. For example, Markus’(2001) study contributed to our understanding of the importance of intermediaries and some of their functions.
However, her study did not fully explore the concept, typologies or comprehensive functions they should perform.

Some studies have focused on intermediaries but not specifically in the context of successful knowledge reuse or sharing. For instance, Davenport and Prusak (1998) only touched briefly on intermediaries in the knowledge market. Similarly, Cillo (2005) focused on the knowledge broker in relation to market knowledge but did not investigate the broker’s role in the organizational reuse process or in KMSs. Also, Aalbers et al. (2004) examined the brokerage role in knowledge transfer but only in the context of networks not in the context of knowledge reuse or sharing.

Some studies have concentrated on just one aspect of knowledge intermediation, such as one type of intermediary, for example, HIs without considering their relationship to the technical intermediary. In one study, Jones et al. (2003) investigated the role of the knowledge champion in KM facilitation. In another study, Pawlowski and Robey (2004), discussed intermediaries in the context of manufacturing and distribution, but restricted their investigation to knowledge brokering from the viewpoint of IT professionals.

Furthermore, there is ambiguity about intermediaries in KM and knowledge flows. There is no theory of knowledge brokering; and the literature reveals little about the roles and practices of brokers in respect to internal knowledge transfer (Pawlowski and Robey, 2004). Moreover, there are different views of what constitutes a knowledge intermediary or broker. Different researchers specify different primary roles relating to the knowledge intermediary. For example, the primary roles include:

- **Adding** value to the knowledge being transferred (Millar and Choi, 2003);
- **Preparing** the knowledge to be transferred (Markus, 2001);
- **Establishing relationships** to enable the knowledge to be transferred or reused (Vishik and Whinston, 1999);
- **Locating** the knowledge to be transferred (Maier and Remus, 2002); and
- **Connecting** buyers to sellers in the process of knowledge transfer and reuse (Davenport and Prusak, 1998).

Clearly there is ambiguity and a lack of consensus on what a knowledge intermediary or broker is, or should be (Behboudi and Hart, 2006). This is one reason that motivates this research. As explained above, another reason is the unappreciated recognition, position, and roles of knowledge intermediaries both in organization and theory as acknowledged by key researchers in the field (Davenport and Prusak, 1998, Markus, 2001, Datta, 2007, Fennessy and Burstein, 2007, Pawlowski and Robey, 2004).

Therefore, this research aims to contribute to knowledge by filling these gaps in the literature and by identifying and understanding intermediaries and their functions for
successful knowledge reuse and sharing. Chapter two reviews these studies in detail, and proposes an initial conceptual framework. The next section describes and investigates the other aspect of the study, namely intermediaries and high-value knowledge reuse and sharing.

1.2.4. Intermediaries and high-value knowledge

This study also explores intermediary-related differences in facilitating high-value knowledge sharing and reuse. In other words, it investigates which type of intermediary is more suitable for facilitating high- and low-value knowledge reuse and sharing. As mentioned, there are two general types of knowledge intermediaries: human intermediary and technical intermediary or IT (Markus, 2001).

One of the issues is the concept of high- and low-value knowledge. It is difficult and problematic to assign value for a piece of knowledge outside of its context. Consequently, in this study, it is the perceived value of knowledge by a participant that is considered.

However, based on some studies it can perhaps be argued that tacit knowledge generally has more value than explicit knowledge. Explicit knowledge has some characteristics of information and can even be regarded as information, which in the value-added hierarchy of data-information-knowledge, has less value than knowledge. Tacit knowledge has some characteristics that make it more valuable; for example, it is not available publicly, it is not easily imitable, it is very important for innovation (Leonard and Sensiper, 1998) it is often unique (Nonaka and Konno, 1998), and it is more important for better performance and decision making (Gadner et al., 2004). On the other hand, when knowledge is articulated and codified some of its value may be lost, because not all parts of knowledge can be articulated. In other words, knowledge may lose some of its value if it can not be completely articulated. Nieto (2004) maintained that "the tacit dimension of knowledge is that which cannot be reduced to information and therefore, cannot be codified" (p. 320). So, some research regards explicit knowledge as information (Ford and Staples, 2006) and tacit knowledge as more valuable knowledge than explicit knowledge.

Based on the prior studies, it seems that there should be a different intermediary for tacit or high-value knowledge and explicit knowledge or information. Hislop (2002) maintained that, for tacit knowledge sharing, a high level of social interaction is necessary, but for explicit knowledge sharing IT systems can be used. Therefore, usually the rich medium, such as face-to-face interactions, which can be facilitated by HIs, is necessary for high-value knowledge sharing and reuse.

There are some issues in knowledge sharing using IT by contributing to KMSs, especially in the case of high-value knowledge, and people are usually reluctant to share in this way. For example, according to Ye et al. (2006), knowledge workers,
distinguish the contribution to KMSs (IT intermediary) from sharing knowledge directly with someone who is known to them, because in sharing knowledge directly with a close friend or colleague there is a sense of reciprocity and enjoyment.

In terms of knowledge reuse, the quality of knowledge in the KMSs (IT intermediary), and the amount of high-value knowledge contributed into the KMSs can indicate the value of knowledge that people can obtain from KMSs. In KMSs, however, there is merely explicit knowledge without the tacit dimension. Moreover, knowledge in KMSs usually suffers in term of quality, meta-data, currency, and accuracy issues. Therefore, it seems that the more high value the knowledge is, the IT is less likely to be the appropriate intermediary.

The question, therefore, arises whether IT can be an appropriate intermediary for high-value knowledge reuse and sharing. If not, maybe HIs can be the more appropriate intermediary for facilitating high-value knowledge sharing and reuse through mechanisms such as providing direct interactions settings. The third research question targets this argument.

1.3. Research Questions

To address the gap described above and for a better understanding of intermediaries, this study aims to answer the following three research questions.

1- Who are the intermediaries or facilitators of knowledge reuse and sharing in a knowledge-intensive multi-unit organization?

2- How can Human Intermediaries improve more and better knowledge reuse and sharing? (What roles and functions should they perform for successful knowledge reuse and sharing?)

3- Is there any significant difference among knowledge intermediaries in terms of the value of the knowledge that they facilitate or intermediate? (OR which intermediaries are most common or suitable for high- and low-value knowledge sharing?)

1.4. Research Objectives and Contributions

As mentioned, in spite of their importance and even the critical role and impact of knowledge intermediaries for successful knowledge reuse and sharing in organizations, relatively little is known about them. This study therefore, aims to examine the concept of knowledge intermediaries, their different types (typologies), and their roles and functions in knowledge reuse and sharing processes, both generally, and more specifically, in high-value knowledge sharing. A greater focus is placed on HIs rather than on technical intermediaries, but IT in relation to HI and knowledge reuse and sharing is also investigated. The purpose of this study is to fill
the gap in the literature concerning knowledge intermediaries and highlight their importance and impact as well as identify their roles in knowledge reuse and sharing.

This study’s main objective is to understand intermediaries in knowledge reuse and sharing by providing a detailed description and interpretation of the types of functions or practices of intermediaries from the perspectives of both KM professionals or other potential intermediaries as well as knowledge users and sharers. To do so, first the relevant literature is reviewed in chapter two. The intention is to clarify this concept as far as possible through a meta-analysis and synthesis of the literature in which the concept is used and discussed, and develop an initial framework. This framework proposes intermediary definitions, types, and functions for knowledge reuse and sharing. The framework is used to guide the practical research. Then an in-depth case study is conducted in the field to explore and understand knowledge reuse and sharing, the intermediaries, and their functions in facilitating them.

Another objective of the study is to extend the Markus initial theory or generate new theory regarding knowledge intermediaries. Markus (2001) acknowledged that her research is “a step toward a theory of knowledge reusability, with emphasis on KMSs and repositories” (p. 57). This current research is another step toward a theory of knowledge reusability, with emphasis on HIs and their typologies and roles. Moreover, due to the lack of theory on intermediaries in KM, this study aims to provide a first step toward a theory of knowledge intermediation.

Furthermore, to clarify the role of IT in KM, and particularly in knowledge reuse and sharing, this study investigates IT as an intermediary to understand the relationship between the type of knowledge flow, in terms of value and the IT intermediation. So the study endeavors to find the type of intermediary that is more appropriate for facilitating high-value knowledge reuse and sharing by examining the impact of the human and technical intermediaries on different valued knowledge. Moreover, the study aims to indicate the appropriate relationship between these two major intermediaries, IT and human.

The research therefore has the potential to improve our understanding of and insights into intermediaries in knowledge reuse and sharing, in relation to both explicit and tacit knowledge, high value and low value, and consequently contribute to the KM literature and practice. This study also aims to provide a clearer insight into the role of IT or KMSs, on knowledge, and especially high-value knowledge, reuse and sharing.

Moreover, this research will make several contributions to practice. First, the findings can help the case study organization, to better manage and improve knowledge reuse and sharing, particularly high-value knowledge reuse and sharing through different human and technical intermediaries. Although this research is case study and its
findings are not generalizable for other organizations, it can provide some useful insights in better management of knowledge sharing and reuse for the knowledge-intensive large multi-unit firms. Second, it can possibly help practitioners to understand the potential of the different types of HIs for their KM initiative and their relatively comprehensive practical functions in facilitating greater and better knowledge reuse and sharing. Third, it can assist the similar organizations in leveraging and exploiting more organizational knowledge by giving them insights for their decision making regarding investment in HIs and technical infrastructure. Fourth, it can indicate high-value knowledge flows in the case study organization and the appropriate intermediaries and their functions for the facilitation of knowledge flows. Finally, it might help practitioners to understand better the position and importance of technical intermediaries, KMSs and KM tools, and the roles played by HIs in making them effective.

1.5. Research Design

Chapter three documents the research methodology of this study but this section briefly outlines the way the research is conducted. The purpose of this study is to explore and understand the knowledge intermediaries and their roles in successful knowledge reuse and sharing, especially in the case of high-value knowledge. A qualitative single case study has been conducted to meet this purpose. Given the range, sophistication, subtlety and complexity of the types, roles and functions of intermediaries, as well as the relative lack of previous research in this area, a qualitative research technique is probably the most appropriate methodology to adopt for this empirical study (Yin, 2003).

In addition, to adequately address the research issues, it is necessary to understand knowledge users, sharers, and HIs’ attitudes to and perceptions of knowledge reuse and sharing. It is also necessary to understand the KMS artifacts and knowledge reuse processes in the organization. Hence, a qualitative approach is likely to be superior because of the richness of the data it typically reveals (Saunders et al, 2003). Indeed, it is the particular strength of qualitative research that it can be used to explore attitudes, behaviour and experiences through methods such as interviewing, and enables the researcher to understand and learn about the dynamics and complexities present within a single field setting (Dawson, 2002).

Furthermore, there are several other reasons that make a case study appropriate for this study. KM and KMSs are inherently context specific and, according to Yin (2003), “the case study is the method of choice when the phenomenon under study is not readily distinguishable from its context” (p. 4). In addition, the “case study strategy has considerable ability to generate answers to the question ‘why?’ as well as the ‘what?’ and ‘how?’ questions” (Saunders et al., 2003, p. 93). This research, moreover, aims to describe the phenomena, extend the knowledge reusability theory,
and probably generate new theory, all of which are included in the purpose of case study (Brewerton and Millward, 2001).

For this study, the single case study approach is used because the selected case is a typical knowledge-intensive multi-unit law firm, and also it is an appropriate case for extending and generating a possible theory, and because the research is exploratory (Yin, 2003).

The case or site of the research is a large knowledge-intensive multi-unit law firm, which has already established a KM initiative and implemented some forms of KMSs and the use of KM tools. In the empirical work combined data collection methods, including interviewing and reviewing relevant archival sources (documents and company reports) as well as investigation of the organizational KMSs are used. Furthermore, a questionnaire has been used to produce some quantitative data to measure the extent of application of different sources or targets for knowledge reuse and sharing. However, the main data source is interview, and the subjects are knowledge users and sharers, and possible HIs.

In addition to a first pilot study, data have been collected in two main phases. In the first phase, several exploratory interviews were conducted and documents about the firm itself, the firm’s KM initiatives and its KMSs were collected and reviewed. Moreover, the researcher reviewed the important artifacts: the KMSs of the organization. The data from this stage were analyzed and this was followed by the second pilot case study prior to the final data collection to improve the case study protocol. As a result, the final data collection was strengthened by feeding in the results of the first data collection, the pilot case study and the new literature review. The final interviews with lawyers and KM team members were then conducted.

The initial data analysis was conducted at the same time as the data collection to allow each process to inform the other, based on qualitative research practice recommendations (Mason 2002 cited in Pawlowski and Robey, 2004). The primary approach to data analysis was content analysis, supported by NVivo software. In this research, due to the multi-aspect nature of the study, three analytic strategies comprising theoretical proposition (initial framework and research questions), rival explanation, and case description, mentioned by Yin (2003) were considered and applied where they were appropriate. The validity and reliability of the case study have been considered and examined according to the tactics recommended by Yin (2003). These tactics include triangulation, checking data and interpretations with participants, discussion with colleagues; developing a case study database and protocol, and presenting through descriptions.
1.6. Outline of Thesis

This thesis is organized and presented in nine chapters as follows:

Chapter 1: Introduction

This chapter introduces the study and describes the background to the research as well as the motivation and reasons for conducting the study. In addition, it describes the research questions, the research objectives and the major contributions of the study and briefly outlines the research design and the study case.

Chapter 2: Literature Review, Background and Conceptual Framework

This chapter reviews the relevant literature and provides the conceptual background for the research. It covers the concept of knowledge and indicates what is meant by knowledge, particularly high- and low-value knowledge in this study. It then reviews the research background and indicates the link between knowledge reuse and intermediaries. This is followed by the most important part of the chapter, which reviews the intermediaries literature. Finally, the last section draws conclusions and proposes an initial conceptual framework.

Chapter 3: Research Methodology

This chapter describes and justifies the research methodology and the methods that are applied in this study. It explains the qualitative research methodology and the application of case study strategy. It then describes activities carried out in preparation for the case study, the two phases of data collection, the data collection methods, the criteria for selecting the case and the subjects as well as interview protocol. Finally, it describes the data analysis strategies, processes, and techniques as well as the evaluation of the research validity and reliability and the ethical considerations.

Chapter 4: Research Site Description

Due to the importance of case description in interpreting a single case study finding, this chapter briefly describes the firm under study, and its KM structure as well as the KMSs and the KM tools of the case.

Chapter 5: The Location-Oriented Typology of Human intermediaries

This chapter presents empirical findings regarding HIs in facilitating knowledge reuse and sharing. It investigates, recognizes and clarifies the concept of HIs or facilitators to answer the first research question. In this chapter the first typology of HIs that emerged from the findings of the case study, namely the location-oriented
typology, including Central and Local HIs, is presented and justified. Also discussed are the findings of the chapter in relation to the literature.

Chapter 6: Human Intermediaries Roles and Functions (The Role-oriented Typology)

This chapter presents the second typology of HIs which is based on the roles that HIs perform to facilitate knowledge reuse and sharing. This chapter mainly provides the answer to the second research question. Essentially, it identifies and presents the list of functions for two types of HI roles, namely knowledge-oriented and technology-oriented HI roles, which should be performed by appropriate HIs for successful knowledge reuse and sharing. It also briefly discusses the findings of the chapter in relation to the literature.

Chapter 7: Intermediaries for High- and Low-Value Knowledge

This chapter answers the third research question. It identifies the high and low value reuse and sharing flows in the case of the study, and common or appropriate intermediary types for their facilitation. It uses the interviews and the sample survey data and suggests which type of intermediary is appropriate for high-value knowledge reuse and sharing. It also briefly discusses the findings of the chapter in relation to the literature.

Chapter 8: Integrating Findings: Two Frameworks

This chapter summarizes the results of the case study and combines, unifies, and justifies them by proposing two conceptual frameworks: a framework for understanding HI types and roles in successful knowledge reuse and sharing, and a framework for knowledge intermediaries and their roles in high- and low-value knowledge flows. In addition, this chapter discusses the position of the findings in the context of literature, and indicates the insights and contributions of the research to the larger body of knowledge.

Chapter 9: Conclusion

This chapter summarizes the answers to the research questions, and then explicitly explains the research contributions, followed by the implications of the research for practice. Finally, it presents and discusses the limitations of the study and makes recommendations for future research.
LITERATURE REVIEW, BACKGROUND AND CONCEPTUAL FRAMEWORK

2.1. Introduction

This chapter reviews the research literature and presents the initial conceptual framework. It covers three major topics including, knowledge, knowledge reuse, and knowledge intermediaries. It is organized in eleven sections:

Section 2.2 reviews the concept of knowledge, its different definitions and taxonomies, and its difference from data and information. It also discusses knowledge epistemologies, including Cognitive, Autopoietic and Connectionistic, and justifies the Connectionistic approach as the epistemology adopted for this study. Section 2.3 specifically investigates knowledge in knowledge-intensive firms, such as a law firm, which is the case of this study, and indicates which definition of knowledge is adopted for this study.

Section 2.4 reviews the literature on the value of knowledge; it investigates the literature about high- and low-value knowledge, and examines their relationship with tacit and explicit knowledge. Section 2.5 briefly reviews knowledge management and its processes.

Section 2.6 reviews the research background. It explains the knowing-doing gap and its relationship to knowledge reuse. Then, it investigates the knowledge reuse literature and the factors that influence successful knowledge reuse. It is argued that, of many factors, intermediaries are vitally important for knowledge reuse. Also here, the Markus (2001) theory of knowledge reusability is reviewed; and the concept of knowledge reuse and sharing for the purpose of this study is clarified.

Section 2.7, reviews the concept of intermediaries in the literature, and discusses the theoretical background of intermediaries or brokers. It briefly investigates the roles and impact of intermediaries in different areas. Section 2.8 reviews the practical studies of HIs in KM and knowledge flows. This provides the basis from which to
understand the types, roles, and functions of HIs in knowledge reuse and sharing. Moreover, in this section, the role of HIs in facilitating high-value knowledge is discussed.

Section 2.9 briefly reviews technical intermediaries, including KMSs and KM tools. Also, the suitability of the technical intermediary in the intermediation of high- and low-value knowledge reuse and sharing is examined.

Section 2.10 draws conclusions from the literature review and proposes the initial conceptual framework. It includes the proposed types of HIs, HI functions, and the appropriate intermediaries for facilitating high-value knowledge reuse and sharing. Finally, section 2.11 summarizes the chapter.

### 2.2. Knowledge Concepts and Epistemologies

Organizations and management activities in recent years have become more knowledge-focused (Alavi and Leidner, 2001). There is a widespread understanding of the role of knowledge in organizations (Southon et al., 2002). But there are many different ideas about the definition of knowledge. This section discusses these issues.

#### 2.2.1. Knowledge concepts, taxonomies, and definitions

It is important to clearly state the research standpoint regarding knowledge. This section briefly reviews different definitions, views, and taxonomies of knowledge. The aim is first, to be familiar with these definitions and views at the outset of the research, second, to show that there is a vast range of views and definitions, third, to show the relationship between knowledge and information in terms of value and action, and, finally, to introduce different perspectives and taxonomies.

Philosophers for many years have been involved in the issue of understanding and defining knowledge in epistemological debates (Alavi and Leidner, 2001, Maier, 2004). In the business, IS, and KM disciplines the term “knowledge” is used widely and often vaguely with many different definitions (Maier, 2004).

The existence in the literature of many different and contradictory definitions and views of knowledge is natural, because KM is a young and developing discipline (Jakubik, 2007). Even some attempt to provide a holistic definition of knowledge has led merely to an acknowledgement of the complexity of knowledge and the concept of KM. For example, Jakubik (2007) stated “it would be naïve and may be not even possible to give a holistic definition of knowledge” (p. 16). Hassell (2007) has stated that “whatever knowledge is, it is certainly a very messy thing” (p. 194). Therefore, the concept of knowledge in the KM literature and in organizations is rather problematic (Southon et al., 2002).
Knowledge is a related but different concept from that information and data with which we are more familiar. Researchers have emphasized this issue extensively, but it remains controversial (Alavi and Leidner, 2001). A common belief is a hierarchical view, which argues that the term data refers to raw materials or facts, information to processed data, or data and facts which are in context, and knowledge to authenticated or value added information, such as human experience that is embedded in environment or context. These three are different in some dimensions such as context, usefulness, value, and interpretability (Alavi and Leidner, 2001, Gardner et al., 2004, Thorn, 2001). Alavi and Leidner (2001), in their wide-ranging literature review of KM, argued that knowledge is personalized information (tacit) in the mind of the holder and when articulated it becomes information. They maintained:

Knowledge is information possessed in the mind of individuals; it is personalized information (which may or may not be new, unique, useful, or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgments. …information is converted to knowledge once it is processed in the mind of individuals and knowledge becomes information once it is articulated and presented in the form of text, graphics, words, or other symbolic forms (p. 109).

Similarly, Hassell (2007) questioned KM, claiming there is no knowledge outside of experience, and experience is always embodied in an individual and in a society (group). However, not everybody agrees with this claim because many researchers consider that knowledge can be explicit and outside of the individual and society.

The dictionary definition of data is “known facts or things used as a basis of inference or reckoning which are out of context, while information is “systematically organized data” (Meadows 2001 in Jashapara, 2004) and knowledge is actionable information which, better than data and information, helps individuals to be effective and make better decisions (Jashapara, 2004).

Furthermore, knowledge can be considered in relation to action. It is a justified belief which increases the capacity of the owner for effective action (Nonaka, 1994). Nonaka and Takeuchi (1995) also describe the differences and similarities of knowledge and information in the following way, and indicated the relationship between knowledge and action.

"First knowledge, unlike information, is about beliefs and commitment. Knowledge is a function of a particular stance, perspective, or intention. Second, knowledge, unlike information, is about action. It is always knowledge 'to some end.' And third, knowledge, like information, is about meaning. It is context specific and relational" (p. 58).
Davenport and Prusak (1998) believe that humans can transform information to knowledge through four Cs: compression, consequences, connections, and conversation. Also, two other famous researchers defined knowledge as follows:

“Knowledge is information that changes something or somebody - either by becoming grounds for actions, or by making an individual (or an institution) capable of different or more effective action" (Drucker, 1989).

“Knowledge is information combined with experiences, context interpretation, and reflection. It is a high-value form of information that is ready to apply to decisions and actions” (Davenport et al., 1998).

Some studies define knowledge as information which is actionable or contextual. Actionable knowledge has some components or types, which Cross and Sproull (2004) categorized as: solutions, referrals, problem reformation, validation, and legitimating. Von Krogh and Roos (1996) considered knowledge for companies “as highly dynamic, personal, contextual, emotion-driven, future-oriented, and value-laden” (p. 425). They argued that knowledge (knowing) has different meanings in companies, for example, distinction-making, caring, languaging, and shaping the future.

Knowledge has been viewed from different perspectives each of which has different implications for KM and KMSs; such as knowledge vis-à-vis data and information, which is discussed above, knowledge as state of mind, object, process, access to information, and capacity (Alavi and Leidner, 2001), explanations of which are beyond the scope of this review.

By considering these definitions of knowledge, it is concluded that for information to be knowledge, it needs to be processed; and knowledge is more valuable than information. These definitions also show that knowledge is actionable, value-added, and contextual and is more ready to use than information.

In addition to different perspectives on the definition of knowledge, there are various knowledge types or taxonomies. Alavi and Leidner (2001) present some knowledge taxonomies, which are shown in Table 2.1. These types include but are not limited to: tacit and explicit knowledge, individual or social (collective) knowledge, declarative (know-about), procedural (know-how), conditional (know-when), relational (know-with), and pragmatic knowledge. Tacit and explicit knowledge are important for this study and will be described later.
Table 2.1. Different knowledge types or knowledge taxonomies (Alavi and Leidner, 2001, p. 113)

<table>
<thead>
<tr>
<th>Knowledge Types</th>
<th>Definitions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacit</td>
<td>Knowledge is rooted in actions, experience, and involvement in specific context</td>
<td>Best means of dealing with specific customer</td>
</tr>
<tr>
<td>Cognitive tacit:</td>
<td>Mental models</td>
<td>Individual’s belief on cause-effect relationships</td>
</tr>
<tr>
<td>Technical tacit:</td>
<td>Know-how applicable to specific work</td>
<td>Surgery skills</td>
</tr>
<tr>
<td>Explicit</td>
<td>Articulated, generalized knowledge</td>
<td>Knowledge of major customers in a region</td>
</tr>
<tr>
<td>Individual</td>
<td>Created by and inherent in the individual</td>
<td>Insights gained from completed project</td>
</tr>
<tr>
<td>Social</td>
<td>Created by and inherent in collective actions of a group</td>
<td>Norms for inter-group communication</td>
</tr>
<tr>
<td>Declarative</td>
<td>Know-about</td>
<td>What drug is appropriate for an illness</td>
</tr>
<tr>
<td>Procedural</td>
<td>Know-how</td>
<td>How to administer a particular drug</td>
</tr>
<tr>
<td>Causal</td>
<td>Know-why</td>
<td>Understanding why the drug works</td>
</tr>
<tr>
<td>Conditional</td>
<td>Know-when</td>
<td>Understanding when to prescribe the drug</td>
</tr>
<tr>
<td>Relational</td>
<td>Know-with</td>
<td>Understanding how the drug interacts with other drugs</td>
</tr>
<tr>
<td>Pragmatic</td>
<td>Useful knowledge for an organization</td>
<td>Best practices, business frameworks, project experiences, engineering drawings, market reports</td>
</tr>
</tbody>
</table>

A famous and widely accepted taxonomy is tacit and explicit knowledge (Nicolas, 2004). This key distinction was made first by Polanyi (1967), and then applied in KM by Nonaka and Takeuchi (1995) who state that “tacit knowledge is personal, context-specific, and therefore hard to formalize and communicate. Explicit or "codified" knowledge, on the other hand, refers to knowledge that is transmittable in formal, systematic language” (p. 59).

Some researchers view tacit and explicit knowledge from the continuum perspective rather than by category (Jasimuddin et al., 2005), so all knowledge can be partly tacit and partly explicit. Due to the importance of tacit and explicit knowledge for this study, section 2.4 explains these and their value further.

2.2.2. Knowledge and different epistemologies

One of the reasons for the different categorizations of knowledge is different epistemologies (Koskinen, 2004). There are different epistemological assumptions
for understanding what knowledge is and how it develops. This section reviews them and adopts the most appropriate one for this study.

Jakubik (2007) identified four views of knowledge: ontological, epistemological, commodity, and community. She argued that in the epistemological view, knowledge is an institutional fact because it needs a human institution such as language for existence; and humans can make objective (entitative, explicit knowledge) and subjective (processual, tacit knowledge) statements, although there is no consensus about the separation or unity of tacit and explicit knowledge. Nonaka and Takeuchi (1995), also from an epistemological dimension, divided knowledge into tacit and explicit, and, from an ontological dimension, divided it into four types: individual, group, organizational, and inter-organizational.

Koskinen et al. (2003) and Koskinen (2004) described two different epistemological assumptions about knowledge: Cognitive and Autopoietic, as shown in Table 2.2:

Table 2.2. Cognitive vs. Autopoietic epistemology (Koskinen, 2004, p. 14)

<table>
<thead>
<tr>
<th>Cognitive epistemology</th>
<th>Autopoietic epistemology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge is a representation of a pre-established reality</td>
<td>Knowledge is creational and based on distinction-making in observation</td>
</tr>
<tr>
<td>Knowledge is universal and objective</td>
<td>Knowledge is history dependent and context sensitive</td>
</tr>
<tr>
<td>Knowledge is transferable</td>
<td>Knowledge is not directly transferable</td>
</tr>
</tbody>
</table>

**Cognitive epistemology:** In this epistemology, knowledge is seen as an accurate representation of the real world or reality; it is developed by further gathering knowledge which in turn means a greater understanding of the reality. The world is considered in an objectivist way. So, knowledge is transferable and people can learn by acquiring it from the environment and adding it to their previously acquired knowledge (Koskinen, 2004). According to this epistemology, knowledge is only explicit knowledge (Koskinen et al., 2003).

**Autopoietic epistemology:** This epistemology is deeply different from cognitive epistemology in terms of the source of knowledge because here knowledge does not come from outside. Rather, just the data comes from outside, which then has to be transformed into knowledge that needs to be interpreted in context. So, knowledge cannot be transferred or conveyed from one person to another; it must be produced rather than imported; and the only method of gaining new knowledge is using
existing knowledge. According to this epistemology, knowledge is context-dependent, not abstract, but embedded in individuals, and is not directly transferable.

Marr et al. (2003) used a similar categorization of the different epistemologies regarding the notion of knowledge creation, but included an additional epistemology called Connectionistic (see Figure 2.1). In contrast to Cognitive epistemology is the Autopoietic view which sees knowledge as socially constructed, but a third view is the Connectionistic one. This joins the other two main epistemologies because it has some characteristics from each. The emphasis of this epistemology is on considering organizations as self-organized networks and relationships; and on the belief that knowledge resides in these connections. Table 2.3 summarizes these three epistemologies regarding knowledge creation.

![Figure 2.1. Classes of epistemologies adopted from (Marr et al., 2003, p. 775)](image)

Marr et al. (2003) found that, based on the type of epistemology or paradigm about knowledge, KM practice may differ. For example, knowledge sharing from a cognitive viewpoint can be achieved through KMSs such as expert systems or the like; from the Autopoietic viewpoint it can occur through unregulated meetings, casual interactions, or free-form discussion forums; and from the connectionist viewpoint it can occur through both regulated and unregulated meetings, semi-regulated group forums, and groupware.
Table 2.3. Three epistemologies regarding knowledge creation (Marr et al., 2003, p. 775)

<table>
<thead>
<tr>
<th>Cognitivist</th>
<th>Connectionist</th>
<th>Autopoietic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitivists consider the identification, collection and central dissemination of information as the main knowledge development activity. Organizations are considered as open organizations that develop increasingly accurate pictures of their predefined worlds through the assimilation of new information. Knowledge is developed according to universal rule, hence the context of the incoming information is important.</td>
<td>There are many similarities here to the cognitivist viewpoint but a difference being that there are no universal rules. As rules are team-based and vary locally, organizations are seen as groups of self-organized networks dependent on communication. The Connectionists believe that knowledge resides in the connections and hence focus on the self-organized dispersed information flow.</td>
<td>Here the context of information inputs is unimportant as it is seen as data only. The organization is a system that is simultaneously open (to data) and closed (to information and knowledge). Information and knowledge cannot be transmitted easily since they require internal interpretation within the system according to the individual’s rules. Thus autopoietics develop individual knowledge, and respect that process in others.</td>
</tr>
</tbody>
</table>

Knowledge reuse will also be different based on each epistemology. For example, knowledge codification and storing is not applicable or possible based on the Autopoietic perspective, while according to the cognitive perspective, knowledge can be codified universally, and can be stored in KMSs or documents; and the connectionist perspective is of limited codification and storage of information and local rules rather than knowledge. Or, as another example regarding knowledge mapping, the Cognitivist believes in mapping knowledge, the connectionist believes in mapping information and rules, while the Autopoieticist believes in mapping individuals with knowledge and capability directories (Marr et al., 2003).

Based on the above discussion, this study relies mainly on the connectionist epistemology. In practice, organizations, especially knowledge-intensive firms, consider both explicit and tacit knowledge. Consequently, they believe in both knowledge codifying and storing through KMSs, and tacit knowledge which is not codifiable. They spend on IT as well as on socialization. A connectionist epistemology aligns closely with this reality and is therefore the more reasonable view. Moreover, considering organizations’ practices it is clear that organizations require and apply both knowledge maps and individual maps; both tacit knowledge and explicit knowledge are important.

This study considers two types of knowledge, tacit and explicit, because both are important and need to be facilitated for successful knowledge reuse and sharing and
the connectionist approach is therefore applied as the appropriate view of knowledge. It falls between the Cognitivist and Autopoietic epistemologies and is seen as more appropriate for understanding the intermediation and facilitation process of knowledge reuse and sharing. Furthermore, the definition of knowledge that is applied for this study (payload knowledge, which is explained in the next section) is suited to the connectionist approach.

2.3. Knowledge and Knowledge-intensive Firms

The nature of knowledge and knowledge processes are closely related to the nature of organizations and their context. The context of the type of organization should therefore be considered when developing models or theoretical frameworks of KM in organizations (Southon et al., 2002). Because this study conducts a case study in a knowledge-intensive law firm, this section therefore briefly reviews the knowledge applied in knowledge-intensive firms, explaining the concept and the type of knowledge shared and reused in this industry.

Knowledge sharing in knowledge-intensive companies is critical due to the importance of employees' tacit knowledge. Alvesson (1995) defined knowledge-intensive companies (including law firms), as opposed to labour-intensive or capital-intensive companies in which human capital is the dominant factor, as characterized by special factors. Such factors include significant incidence of problem solving and non-standardized production; a heavy reliance on individuals; a high degree of professionalisation; employees' minds and networks as critical elements; and a heavy dependence on the loyalty of key personnel.

In analyzing the anatomy of knowledge sharing in professional service firms, Weiss (1999) considered several knowledge related factors: first, there is a limited shelf life for knowledge because much of the needed knowledge is highly dynamic: for instance, client or market information and the constant learning of the individual. Second, there is radical uncertainty about the knowledge need because it is not predictable given every client's situation and needs are different. Third, the required knowledge for any particular client is dispersed rather than centralized and is therefore hard to retrieve. And, finally, to create and use knowledge there is a real need for interaction and customization between firm and client.

Typically, law firms and their staff engage in the practice of law and their primary service is to advise clients (individuals or corporations) or provide them with knowledge regarding their legal rights, responsibilities, and issues in respect to their business or other matters. To a large extent, both the input and the output of a law firm or lawyers (knowledge workers) is knowledge, a wide range of knowledge. So a law firm is a knowledge-intensive service provider and its business operations rely heavily on the professional knowledge of its experts.
Knowledge and KM in law firms is different from other industries such as manufacturing. For example, there is no mass production or a refining cycle for products, and clients are usually unique; the outcome is highly customized and fluctuates (Terrett, 1998). In the context of law firms, lawyers need knowledge for legal research. They need three major skills to be competent legal researchers. These are: knowing how to find appropriate information, knowing where to find appropriate information, and keeping up with new information (Du Plessis and du Toit, 2006). So they need various types of knowledge or information to get their job done.

Higgins (2006) emphasized the multi-faceted aspect of knowledge in knowledge-intensive firms: “Knowledge in the knowledge-intensive firm is multi-faceted and complex, being situated and abstract, implicit and explicit, distributed and individual, developing and static, verbal and encoded” (p. 190).

The knowledge required in this industry, therefore, is broad and includes many types. McKenzie (2002) studied knowledge and knowledge exchange in a knowledge-intensive consulting firm. He found that consultants, knowledge workers, place little importance on the relatively controversial distinction between data, information, and knowledge; nor do they pay much attention to the distinction between different types of knowledge. For example, it is not very important for them whether knowledge is articulated or non-articulated, tacit or explicit, whether it is know-how, know-why, know-what, or know-who. Sometimes, even these terms are confusing because they focus on practical knowledge and not the theoretical distinctions regarding knowledge.

An important conceptualization of knowledge in such firms is regarding knowledge as something required to solve a problem, or satisfy clients' need, which brings revenue for the firm - the payload. So payload knowledge is the “melting pot” of all types of knowledge, including tacit (know-how) and explicit (know-what). It covers knowledge workers' professional and artistry skills as well as their diverse and common knowledge relevant to working for clients. Also, their personal experiences and background in the area are included in this type of knowledge. Generally, payload knowledge is defined as:

The specific distillation of knowledge, tacit and explicit, required to resolve an applied problem in context – for which the consultant [knowledge workers] (or the company they represent) receives fees for services from a client (p. 135).

McKenzie (2002) identified two other types of knowledge that knowledge workers need in knowledge-intensive companies, including administrative knowledge (required to run the firm) and prospect knowledge (required to win new work or clients). Figure 2.2 shows these three types of knowledge. It indicates that payload knowledge, which is anything knowledge workers require to get the job done,
includes parts of both these types of knowledge. But the main knowledge for the knowledge worker is payload knowledge.

![Knowledge types in knowledge intensive firms](image)

Figure 2.2. Knowledge types in knowledge intensive firms (McKenzie, 2002, 233)

In this study, this definition of knowledge is adopted in conducting the practical research, because, in practice, this definition is appropriate for the knowledge required by knowledge workers in a law firm. Moreover, by adopting this definition, we avoid the different theoretical distinctions of knowledge, which can sometimes be confusing in the practical world.

2.4. Differently Valued Knowledge

This section, first discusses the value of knowledge. The relevant literature is then reviewed regarding which type of knowledge is high or low value. This is necessary to understand the relative suitability of different intermediaries for them.
2.4.1. Value of knowledge

"Knowledge creates value when it is put into action. But not just any knowledge or any action" (O'Dell et al., 1998, p. 31).

Evaluating knowledge and understanding the high-value knowledge flows are important concepts for knowledge reuse and sharing. Recently, knowledge-intensive organizations have concentrated increasingly on measuring and evaluating organizational intellectual capital, or knowledge. The emergence of approaches, such as the balanced scorecard, which measure performance from different perspectives, such as learning and growth among others, reflect the importance of measuring the value of knowledge (Bose and Thomas, 2007). However, one of the largely neglected aspects of KM is management of knowledge quality and differentiating between high quality knowledge and low quality knowledge in organizations (Schreyögg and Geiger, 2007). As a result, there is little available literature in this regard; this study can be seen as an initial attempt in this respect.

Measuring the value of knowledge is inherently difficult if not impossible, but without it the development of comprehensive, practical and theoretical guides and frameworks for KM is also difficult (Ahn and Chang, 2004, Barlatier et al., 2007). Some studies have tried to present a way to measure knowledge value. For example, Ahn and Chang (2004) measured the contribution of knowledge to business performance by using process and product as intermediaries rather than assessing the value of knowledge directly.

The real value of knowledge can be determined according to many different factors, including knowledge users, related work, the nature of knowledge, and industry structure (Ryu et al., 2005). Ryu et al. (2005) observed that people spend more resources to create knowledge when the value of knowledge is high because that knowledge can cover the generation costs.

The value of knowledge in organizations can be considered from different perspectives, such as the perceived value of knowledge of employees from the organization's point of view, the perceived value of knowledge according to the seeker or receiver, and the perceived value of knowledge according to the owner or sharer (Ford and Staples, 2005). In this study, the last two are used. "For an organization, value like beauty is in the eye of the beholder", so knowledge is valued as it is perceived (Bogdanowicz and Bailey, 2002, p. 127). The perceived value of knowledge depends on the holder, or the receiver. Moreover, knowledge should be evaluated in context and associated with something.

This study measures not value of knowledge itself. Rather, the value of knowledge is determined according to self-reported perceived value by people in relation to its
value for accomplishing their core task. So, we accept high- and low-value knowledge as it is perceived by participants in the study.

2.4.2. High / low-value knowledge, and tacit / explicit knowledge

The last section concluded that for the practical purpose of this study, we consider the perceived value of knowledge; however, in the literature, one type of knowledge is regarded as relatively more important or valuable. This is investigated here to assist in finding appropriate intermediaries for facilitation of high and value knowledge in the initial framework.

As noted previously, one of the most popular taxonomies of knowledge contrasts tacit and explicit knowledge. An assumption behind the classification of knowledge into explicit and tacit by researchers such as Nonaka (1994) is that tacit knowledge is more valuable knowledge than explicit because it is not possible to convert tacit knowledge into explicit knowledge (Alavi and Leidner, 2001). Therefore, it may be argued that generally, tacit knowledge has more value than explicit knowledge. This may also be because explicit knowledge has some characteristics of information and can even be regarded as information, which, in the hierarchy of data-information-knowledge, has less value than knowledge.

Tacit knowledge has some characteristics that make it more valuable. For example, it is not available publicly and imitation is not possible (Leonard and Sensiper, 1998). Moreover, it is unique (Nonaka and Konno, 1998). Foskett (1982, in Molapo, 2007) defined knowledge and information, stating “knowledge is what I know; information is what we know.” So the explicit knowledge may not be unique or rare and consequently it is less likely to be regarded as high-value knowledge or as important for competitive advantage. On the other hand, explicit knowledge is regarded mostly as technical or academic data or information (Smith, 2001). This is further elaborated in the following paragraphs. However, this research is not arguing that all tacit knowledge is high-value knowledge, nor that all explicit knowledge is low-value knowledge.

**Importance or value of tacit knowledge:** Although both tacit and explicit knowledge are important, tacit knowledge is more important for better performance and decision making (Gadner et al., 2004). Tacit knowledge is unique and valuable (Mohamed et al., 2004). Nonaka and Konno (1998) emphasize the importance of tacit knowledge and maintain that for Japanese the primary knowledge is tacit knowledge:

Explicit knowledge can be expressed in words and numbers and shared in the form of data, scientific formulae, specifications, manuals, and the like. This kind of knowledge can be readily transmitted between individuals formally and systematically. In the West, in general, this form of knowledge has been
emphasized. Many Japanese, however, view knowledge as being primarily tacit, something not easily visible and expressible. Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or share with others. Subjective insights, intuitions, and hunches fall into this category of knowledge. Tacit knowledge is deeply rooted in an individual's actions and experience as well as in the ideals, values, or emotions he or she embraces (p. 42).

Some studies have investigated and revealed the value of tacit knowledge to organizations (Nonaka and Takeuchi, 1995). Leonard and Sensiper (1998) examined the role of tacit knowledge in group innovation and placed more value on tacit knowledge due to its being a source of competitive advantage and creativity. They maintained:

Tacit knowledge is a tremendous resource for all activities—especially for innovation. The tacit dimensions of individual knowledge are not publicly available except as embodied in people to be hired, and the tacit dimensions of Collective knowledge are woven into the very fabric of an organization and are not easily imitated. Therefore, tacit knowledge is a source of competitive advantage. The creativity necessary for innovation derives not only from obvious and visible expertise, but from invisible reservoirs of experience (p. 127).

It seems that some authors see four levels in the hierarchy of data, information and knowledge by splitting knowledge into explicit knowledge and tacit knowledge, and placing tacit knowledge as the last one, considering it of higher value than explicit knowledge. Hunter et al. (2002, pp. 6-7) who, interestingly, conducted their study in a knowledge-intensive law firm claimed:

**Data** can be viewed either as factual, raw material or as signals with no meaning. **Information** is data that has meaning and is refined into a structured or functional form within a system - for example, client databases or directories (Spender, 2000). **Explicit - or codified or articulated** - knowledge relates to 'knowing about', can be written and easily transferred. In the professional service firm codification may include manuals, specialised databases or collections of case law, but may also take the form of standardised techniques of investigation or templates for the preparation of legal documents. **Tacit knowledge** is 'knowing how' or 'understanding' and cannot be directly transferred between individuals; rather it will be 'revealed' through application, practice and social interaction. In the professional firm this was traditionally developed through the master-apprentice relationship and the role of the senior partners in building the social capital of the firm through client contact and networks (Maister, 1997). Tacit knowledge is thus a more difficult source of value to manage and its diffusion is likely to be slow and difficult, but it is also likely to have a higher probability of creating strategic value (Lane and Lubatkin, 1998).
Even in industries that typically may not be regarded as knowledge-intensive, such as the construction industry, tacit knowledge is found to be more valuable for organizational performance and competitive advantage due to its intrinsic characteristics, notably because it is unique and relatively immobile (Pathirage et al., 2007).

In the context of law firms, Parsons (2004) divided knowledge for lawyers into external resources and internal resources. External sources include personally created information and tools, externally created information and tools, and firm created information and tools. According to Parsons (2004), the internal resources or in-brain resources include: tacit technical knowledge, tacit knowledge about sources, tacit knowledge about people, motivation, skills, and values/beliefs. He emphasized the importance and value of tacit knowledge, discussing them in a chapter with an informative title “tacit is king”.

**Explicit knowledge is information:** when knowledge is articulated and codified it may lose some of its value, because not all knowledge can be articulated; on the other hand, if it becomes public information, according to the hierarchy of data-information-knowledge, information is less valuable than knowledge. Nieto (2004) confirmed that “the tacit dimension of knowledge is that which cannot be reduced to information and therefore, cannot be codified” (p. 320). Maybe that is why some researchers regard explicit knowledge as information, Ehnbom (2002) for example, argued that explicit knowledge is information or data and if individuals want to act based on this data or information, they need to turn it into their own tacit knowledge. Tsai and Tsai (2005) also regarded explicit knowledge as information or instruction, and Butler et al. (2007) claimed that “shared explicit knowledge is information in text books and manuals provided by an organization for people to learn from” (p. 282). Nieto (2004) observed “explicit knowledge is fully articulated, codified in a precise manner and perfectly decipherable. The main ingredient of explicit knowledge is information” (p. 320).

Ford and Staples (2006), who investigated the high- and low-value knowledge flows in organizations, also argued that explicit knowledge is information and therefore probably has less value than tacit knowledge. Nevertheless, they acknowledged that this proposition is not fully accepted.

Tacit knowledge is more valuable and useful for immediate application and action. However, explicit knowledge is less ready to use (is not yet internalized) and maybe, needs the application of additional processes or contexts. It is therefore less valuable for the tasks of knowledge workers.

In general, it appears that tacit knowledge has relatively more value and can be regarded as high-value knowledge. Explicit knowledge on the other hand is information and compared to tacit knowledge has less value and can be regarded as
low-value knowledge; although this claim is debatable and one may argue the reverse. Low-value knowledge here does not mean the knowledge is useless. Rather, it has less than the highest value that can be assigned to a piece of knowledge for client-relevant tasks.

In addition to general knowledge or payload knowledge facilitation, this study aims to discover how high-value knowledge reuse and sharing can be facilitated. So, based on this tentative conclusion, the role of intermediaries, especially IT, in high- and low-value knowledge reuse and sharing will be investigated in reviewing the intermediary literature.

2.5. Knowledge Management

KM is a young area of study that is rooted in multiple disciplines and, consequently, contains many definitions that lack consensus (Maier, 2004). Earl (2001) has identified seven KM schools, suggesting that KM can not only be defined in different ways, but that there is considerable choice in both what to do and how to do it. KM is a process of leveraging knowledge in organizations in order to keep organizations competitive. It involves at least four main processes of knowledge creation: knowledge storage/retrieval, knowledge transfer, and knowledge application or usage (Alavi and Leidner, 2001). Jashapara (2004), by integrating different dimensions of KM with consideration of the multidisciplinary perspectives, defines KM as:

The effective learning processes associated with exploration, exploitation and sharing of human knowledge (tacit and explicit) that use appropriate technology and cultural environment to enhance an organization’s intellectual capital and performance (p. 12).

Diakoulakis et al. (2004) believe that KM concentrates on “integration and coordination of individuals’ knowledge” and aims to manage and apply the current knowledge of an organization and create new knowledge.

Bhatt (2001) categorized the KM process into knowledge creation, knowledge validation, knowledge presentation, knowledge distribution, and knowledge application activities. He has shown that KM is not a simple question of capturing, storing, and transferring information; rather, it requires interpretation and organization of information from multiple perspectives, including changing the organizational culture.

Another common categorization of knowledge and KM processes involves the two processes of knowledge creation, and knowledge reuse (Davenport et al., 1996, Markus, 2001). Importantly, knowledge reuse is crucial for KM success and is a critical concept in KM (O'Leary, 2001). Among the different processes of KM, this study focuses on knowledge reuse.
Davenport et al. (1998) found that the KM projects of companies shared similar objectives, including creating a knowledge repository, improving knowledge access, enhancing the knowledge environment, and managing knowledge as an asset.

The knowledge Management System (KMS) is an important concept in KM, but because it is a technical intermediary, it will be reviewed in the technical intermediaries section.

Law firms and KM: The nature of knowledge and the knowledge process are closely related to the nature of the organization and the context. The nature of the organization must therefore be considered when developing models or theoretical frameworks of KM (Southon et al., 2002). This study conducts a case study in a law firm. There are many challenges and factors in the legal context that necessitate effective KM in law firms. Authors agree that the competitive advantage of law firms is knowledge; when applied, it produces a renewable, reusable and accumulating resource of value to the firm (Gottschalk and Khandelwal, 2003). Law firms are knowledge-intensive organizations that KM suits well (Gottschalk and Khandelwal, 2002). KM delivers significant advantages to law firms, such as increased efficiency, increased quality assurance, a competitive edge and protection from loss of know-how (Schulz and Klugmann, 2005).

Schulz and Klugmann (2005) have defined KM in law firms “as a continuous process of systematically collecting, analyzing, organizing and distributing know-how relevant to legal practice” (p. 386). They identify two requirements for KM processes, a dedicated KM staff, and the design and development of an appropriate IT infrastructure (technical and human intermediaries).

2.6. Knowledge Reuse and Sharing

The focus of this thesis is on intermediaries in knowledge reuse. This section reviews the materials relevant to this specific topic. This includes the problem of the ‘knowing-doing gap’, and knowledge reuse as a solution. The knowledge reuse literature is reviewed to discover the significant factors in successful knowledge reuse. Then the Markus (2001) theory of knowledge reusability, which links knowledge reuse to knowledge intermediaries, is presented. Finally, the concept of knowledge reuse for this study is clarified.

2.6.1. The knowing-doing gap

The ultimate purpose of KM initiatives is the optimum application of knowledge in organizations. However, a review of the literature, combined with the experience of organizations, including the experiences of the researcher who has worked in the service industry, indicate that one of the main problem areas in organizations is the lack of use, reuse or application of available knowledge or of knowledge that can be
made easily available through some facilitation. This problem is called the "knowing-doing gap". This is the gap between what an organization and its staff know and what they do. It is a common situation: managers or employees do not apply knowledge that is available to them (Zaccaro and Banks, 2004, Pfeffer and Sutton, 1999).

Organizational internal knowledge is critical for organizational performance, but is not always used as it should be. For example, according to one survey "almost 50% of the companies reported having suffered a significant setback from losing key staff ... because of the departure of a single employee" (Alavi and Leidner, 2001, p. 113). This indicates the importance of internal knowledge and the cost of not using it. Another study revealed that most organizations believe that much of the knowledge that is necessary for success exists inside the organization. However understanding of this, locating knowledge, and leveraging it is problematic (Alavi and Leidner, 2001).

Although it seems the knowing-doing gap is a general problem in most organizations and industries, it is a serious problem in knowledge intensive industries. This problem and the role of KM are identified and discussed extensively by Pfeffer and Sutton (1999) as summarized below.

**Knowing-doing gap and KM (knowledge application or reuse)**

Pfeffer and Sutton (1999) are among those researchers who have criticized the role of KM in knowledge application. According to them, one of the presumptions in KM is that, like tangible goods, knowledge is something explicit that is applied efficiently when it is acquired or developed as intellectual property, whereas possessing knowledge does not necessarily lead to action. Another issue in KM is that it mostly emphasises creating, storing, and retrieving knowledge and the required technology rather than the application of knowledge. Moreover, there are often limited or inaccurate views in KM of how people really use knowledge in their work. Pfeffer and Sutton (1999) conclude that there are various reasons why KM practices make knowing-doing gaps worse. These reasons include the following:

- KM efforts mostly emphasize technology and the transfer of codified information.
- KM tends to treat knowledge as a tangible thing, as a stock or a quantity, and therefore separates knowledge as something from the use of that thing.
- Formal systems cannot easily store or transfer tacit knowledge.
- The people responsible for transferring and implementing KM frequently do not understand the actual work being documented.
- KM tends to focus on specific practices and ignores the importance of philosophy (p. 93).

Pfeffer and Sutton (1999) also argue that understanding the existence of the knowing-doing gap is not enough; there is a need to know how to reduce the gap. Because
knowledge in general or knowledge in KMSs is only valuable when it is used, the problem is not always a lack of knowledge but a failure in use.

Arising from the literature review, a small scale pilot study was conducted to investigate and confirm this problem in practice. The pilot study is presented briefly in the next section. Then, to address this important problem, the knowing-doing gap and knowledge reuse is considered in the following sections.

**Primary pilot study of the knowing-doing gap**

With the exception of the Pfeffer and Sutton’s research in 1999, there is little other previous research about the knowing-doing gap. Although Pfeffer and Sutton explained the knowing-doing gap well, their study was not based on empirical research. It therefore seemed appropriate to confirm this problem by means of a practical study. The pilot study was conducted during the initial stages of this research, and included a survey and interviews with practitioners in two organizations.

An explanatory questionnaire was designed and distributed during the Australian Capital Territory Knowledge Management (ACTKM) conference held in November 2005. Respondents to this questionnaire were either in charge of KM in their organizations or KM practitioners. Participants came from a range of organizations in Australia. Approximately 70 questionnaires were distributed; 20 were returned and analyzed.

The results revealed that almost all participants believed there is a gap between knowing and doing in organizations generally as well as in their own organizations. Moreover, about 75 percent believed organizations did not make full use of their available knowledge or organizational memory (Behboudi, 2006a).

So, the result of this pilot study provides some evidence that the knowing-doing gap in organizations is a significant problem and needs to be addressed. One way to bridge the knowing-doing gap is reusing knowledge. Organizations can better exploit their important resources and knowledge by improving knowledge reuse. The next section reviews the literature on knowledge reuse to understand how it can be improved.

**Addressing the knowing-doing gap with knowledge reuse**

As previously mentioned, one common categorization of knowledge and KM processes involves two categories: knowledge creation and knowledge reuse (Davenport et al., 1996, Markus, 2001) and the focus of this study is knowledge reuse. As Alavi and Leidner (2001) indicated the knowledge application and reuse
problem is important and remains a gap in KM literature. They therefore recommended future research on bridging the knowing-doing gap.

2.6.2. Knowledge reuse

As noted above, one purpose of KM is optimizing usage of organizational knowledge. Improving knowledge reuse is one step towards that aim and towards bridging the knowing-doing gap. This section therefore discusses the concept of knowledge reuse.

Markus (2001) initial theory of knowledge reusability proposes intermediaries as a solution for knowledge reuse. However, before investigating intermediaries, it is necessary first to briefly review the literature on knowledge reuse and the factors that influence knowledge reuse; what factors reduce the knowing-doing gap.

There are differing definitions of knowledge reuse. For example, it is regarded as a process that includes capturing or documenting, packaging, distributing or disseminating, and reusing knowledge (Markus, 2001). Alternatively, it is regarded as a subdivision of knowledge transfer in addition to knowledge sharing and is defined as a process of using sharing knowledge (Majchrzak et al., 2004, Alavi and Leidner, 2001).

There is a trade-off between productivity and creativity when users (such as system designers) reuse prior knowledge. If users completely, or mostly, reuse previous knowledge appropriately, resources and time are saved and, consequently, productivity is increased. In contrast, if users do not reuse knowledge, they may reach a creative solution, but the risks of being unsuccessful and wasting resources remain (Demian and Fruchter, 2006). Indeed, it is important to strike a balance between productivity and creativity, because the main objective of reuse is saving resources such as money and time, but not at the cost of the quality of the final solution (Demian and Fruchter, 2004). For organizations that want to be both creative and productive, therefore, previous knowledge is a major basis for decision making. In law firms, traditionally, there was both a focus and a reliance on external knowledge. Currently, however, there is a greater focus on internal knowledge and, consequently, on knowledge reuse and sharing (Broady-Preston and Williams, 2004).

Majchrzak et al. (2004) in their review of the existing literature found several frameworks for understanding knowledge reuse. Mainly, these frameworks fall into two categories: those that focus on knowledge acquisition (or replication) and those that focus on knowledge integration. According to the first category, the “recipient” acquires and applies the knowledge of the "source" and replicates the important component of the source's knowledge. This is called "knowledge reuse as replication". In this kind of knowledge reuse, there is a direct relationship between increasing knowledge reuse and the familiarity of the sources (in terms of initial
shared experience and context). The second kind of knowledge reuse is very important for radical innovation: knowledge is not only acquired but also integrated across different sources of knowledge. Knowledge reuse for radical innovation does not rely solely on shared experiences between sources and recipients. According to six reuse cases, Majchrzak et al. (2004) presented a model of the knowledge reuse process for innovation. This process included six stages:

- reconceptualize the problem and approach for innovation,
- decide to search for reusable ideas,
- scan for reusable ideas,
- briefly evaluate reusable ideas,
- conduct in-depth analysis on reusable ideas and select one, and
- fully develop reused idea (p. 184).

Prior studies indicate the importance of knowledge reuse for organizations. Thus, an understanding of the optimum usage of organizational knowledge and the factors that lead an improvement in knowledge reuse and, consequently, better decision-making is valuable research. Due to the human and technological aspects of knowledge reuse, many factors are important in the effective reuse of knowledge.

To understand the factors that affect knowledge reuse, a broad literature review has been conducted. About 70 factors were identified that were recognized by many researchers in the studies of knowledge reuse, knowledge transfer and the application of KMSs. These factors categorized and aggregated into three major categories of factors which have an impact on knowledge reuse: organizational factors, individual factors, and knowledge repository or system (KMS) factors. They are discussed briefly in the following sub-sections.

(1) Organizational factors

Increased and improved knowledge reuse requires consideration of many organizational factors. Organizational support plays a key role in KM success and, consequently, also in knowledge reuse. Table 2.4 summarizes studies that identified organizational factors which influence knowledge reuse. Examples include: Managers and organizational structures can positively facilitate knowledge reuse among personnel via organizational processes and routines (Venters, 2004); organizational culture can enable knowledge transfer by emphasizing co-operation and collaboration, high levels of trust, and a problem-seeking/solving culture (Lucas and Ogilvie, 2006, Goh, 2002); A work environment that is characterized by high structural flux and information-sharing norms is important for knowledge reuse (Westphal and Shaw, 2005); HRM activities, are directly related to knowledge transfer (Minbaeva, 2005) and integration of KM and KMSs with the business process improves knowledge reuse (O'Leary, 2001).
Table 2.4. Summary of organizational factors that influence knowledge reuse success

<table>
<thead>
<tr>
<th>Study</th>
<th>Factor</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venters (2004); Goh (2002)</td>
<td>Managers and organizational structures</td>
<td>Positively facilitate Knowledge reuse through organizational processes and routines</td>
</tr>
<tr>
<td>Malmborg (2004)</td>
<td>Local authorities</td>
<td>As a knowledge bank, and brokers facilitate knowledge transfer</td>
</tr>
<tr>
<td>Syed-Ikhsan and Rowland (2004)</td>
<td>Organizational structures</td>
<td>No positive relationship between organizational structure and knowledge transfer performance</td>
</tr>
<tr>
<td>Owen et al. (2004)</td>
<td>Integration of knowledge reuse and organizational processes, and supportive organizational structure</td>
<td>Lack of incorporation of knowledge reuse processes into the organizational processes or lack of support by the organizational structure is an important reason for knowledge reuse failure</td>
</tr>
<tr>
<td>Lucas and Ogilvie (2006); Goh (2002)</td>
<td>Organizational culture</td>
<td>Can enable knowledge transfer by emphasizing co-operation and collaboration, trust and a problem seeking/solving culture</td>
</tr>
<tr>
<td>Lucas and Ogilvie (2006)</td>
<td>Employees’ ideas about sharing knowledge, and familiarity with each others</td>
<td>Knowledge transfer success is influenced by employees’ idea about sharing knowledge and their familiarity with each other</td>
</tr>
<tr>
<td>Westphal and Shaw (2005)</td>
<td>Work environment</td>
<td>High structural flux and information-sharing norms impacts on knowledge reuse</td>
</tr>
<tr>
<td>Venters (2004)</td>
<td>Socialization, collaboration and positive relationships</td>
<td>They contribute to obtaining knowledge and knowledge reuse</td>
</tr>
<tr>
<td>Minbaeva (2005)</td>
<td>HRM activities</td>
<td>They affect the absorptive capacity of people and foster a supportive learning environment,</td>
</tr>
<tr>
<td>Watson and Hewett (2006)</td>
<td>Formal training in knowledge reuse and KMSs</td>
<td>Formal training in knowledge reuse and firm’s KMSs increase knowledge reuse</td>
</tr>
<tr>
<td>Fischer (2002)</td>
<td>Business imperative</td>
<td>If KMSs serve specific business needs, knowledge reuse is increased</td>
</tr>
<tr>
<td>O’Leary (2001)</td>
<td>Integration of KM and KMSs into business processes</td>
<td>Integration improve more knowledge reuse</td>
</tr>
</tbody>
</table>

(2) Individual factors

In addition to organizational factors, those related to individuals are also important for better and increased knowledge reuse and sharing. Table 2.5 summarizes several studies that have identified individual factors; for example, recipients lack motivation, absorptive and retaining capacity leads to poor knowledge reuse or transfer (Goh, 2002). Careful use of incentives leads to better knowledge reuse

Table 2.5. Summary of individual factors that influence on knowledge reuse success

<table>
<thead>
<tr>
<th>Study</th>
<th>Factor</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goh (2002)</td>
<td>Knowledge recipient</td>
<td>Recipient’s lack of motivation; absorptive and retaining capacity leads to poor knowledge transfer</td>
</tr>
<tr>
<td>Markus (2001)</td>
<td>Incentives or rewards</td>
<td>Careful use of incentives and intermediaries as a solution for better knowledge reuse</td>
</tr>
<tr>
<td>Lucas and Ogilvie (2006)</td>
<td>Incentives</td>
<td>No impact of incentives in knowledge transfer</td>
</tr>
<tr>
<td>Sundaresan and Zuopeng (2004); Majchrzak et al. (2004)</td>
<td>Encouragement</td>
<td>Importance of encouraging knowledge sharing and reuse</td>
</tr>
<tr>
<td>Tsai and Tsai (2004)</td>
<td>General knowledge about the domain</td>
<td>Reuser’s general knowledge about the domain of interest impacts on knowledge reuse</td>
</tr>
<tr>
<td>Majchrzak et al. (2004)</td>
<td>Knowing the adoption, shared experience, and need</td>
<td>Knowing the adoption of idea for innovation, shared experience with source, and need for knowledge are important factors for successful knowledge reuse for innovation.</td>
</tr>
</tbody>
</table>

(3) Knowledge management systems and IT factors

Many IT or KMS relevant factors affect knowledge reuse. Generally, KM initiatives rely on IT as a significant enabler that can support KM, including knowledge reuse, in various ways (Alavi and Leidner, 2001). Table 2.6 summarizes some studies that have identified these factors. For example, appropriate design such as object-oriented and user-friendly graphical modeling increases knowledge reuse (Walczak, 1998). “Perceived usefulness” and “perceived ease of use” influence knowledge reuse (Davis, 1989). Knowledge characteristics (with metadata, complementary, broad, link to practice) is an important factor in knowledge reuse (Majchrzak et al., 2004, Fischer, 2002).

One very important factor that facilitates and improves knowledge reuse is the human and technical intermediary (Markus, 2001). The next section first presents Markus’ theory of knowledge reusability and then discusses the impact of intermediaries in knowledge reuse.
Table 2-6. Summary of knowledge repository and IT factors that influence knowledge reuse success

<table>
<thead>
<tr>
<th>Study</th>
<th>Factor</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alavi and Leidner (2001)</td>
<td>Information technology</td>
<td>Supports KM, including knowledge reuse in various ways as a significant enabler</td>
</tr>
<tr>
<td>Syed-Ikhsan and Rowland (2004)</td>
<td>ICT infrastructure and adequate ICT know-how</td>
<td>has significant relationship with knowledge transfer performance</td>
</tr>
<tr>
<td>Albino et al. (2004)</td>
<td>Information technology</td>
<td>Improve efficient knowledge transfer IT by increasing the speed of knowledge transfer, and reducing costs related to time and distance</td>
</tr>
<tr>
<td>Walczak (1998)</td>
<td>Object-oriented databases</td>
<td>Offer rich data modeling capacity and knowledge storage facilities, user-friendly graphical modeling which support knowledge reuse</td>
</tr>
<tr>
<td>Galup et al. (2003)</td>
<td>Enterprise Knowledge Dictionary (EKD)</td>
<td>Allows users to search better sources for knowledge and retrieve available knowledge</td>
</tr>
<tr>
<td>Rowley (2000)</td>
<td>Design (characteristics) of KMSs</td>
<td>Impacts on knowledge reuse through objectivity, accessibility, relevance, structure and organization, and currency of systems</td>
</tr>
<tr>
<td>Davis (1989)</td>
<td>Perceived usefulness and perceived ease of use.</td>
<td>Influences the application of KMS for knowledge reuse</td>
</tr>
<tr>
<td>Watson and Hewett (2006)</td>
<td>Ease of access to knowledge</td>
<td>Is an important factor in knowledge reuse because it is an indicator of ease of use</td>
</tr>
<tr>
<td>Watson and Hewett (2006); Szulanski et al. (2004)</td>
<td>Value of knowledge and trustworthiness of source</td>
<td>Are factors for more frequent knowledge reuse</td>
</tr>
<tr>
<td>Watts (1998)</td>
<td>Source credibility, argument quality and information usefulness</td>
<td>Are predictors of knowledge persuasiveness for reuse</td>
</tr>
<tr>
<td>O'Leary (2001),</td>
<td>Right resources in KMS and its deployment</td>
<td>Are important factors for more frequent knowledge reuse</td>
</tr>
<tr>
<td>Westphal and Shaw (2005)</td>
<td>Knowledge characteristics</td>
<td>Knowledge transfers are more likely if the knowledge is explicit rather than tacit, complementary rather than substitutive, broad rather than specific,</td>
</tr>
<tr>
<td>Majchrzak et al. (2004); Fischer (2002)</td>
<td>Having right resources with metadata</td>
<td>Having the right resources deployed with knowledge of the metadata (context and credibility of source) within the KMS leads to more knowledge reuse</td>
</tr>
<tr>
<td>Markus (2001).</td>
<td>Human and technical intermediaries</td>
<td>Intermediaries are important factors for successful knowledge reuse</td>
</tr>
</tbody>
</table>
(4) Theory of knowledge reusability

By synthesizing a wide variety of sources, Markus (2001) developed a theory of knowledge reusability. She presents an initial theory or, as she herself said, a first step toward a theory of knowledge reusability. Due to the importance of this theory in knowledge reuse as well as in this study, this section briefly explains the theory. First, Markus categorizes the process of knowledge reuse into four processes:

- Capturing and documenting knowledge,
- Packaging knowledge,
- Distributing knowledge, and
- Reusing knowledge.

As is clear from the processes identified above, Markus treats knowledge largely as an object; in other words, she focuses on explicit knowledge. For this reason, she emphasizes the role of IT in knowledge reuse. She identifies three main roles in the knowledge reuse process, namely, the knowledge producer or documenter of the knowledge, knowledge intermediary, and the knowledge consumer. Her theory also includes a typology of knowledge reuse situations. Based on the characteristics of the knowledge reusers and the purpose of the reuse at least four types of situations are recognized and defined. These include: Shared Work Producers, Shared Work Practitioners, Expertise-Seeking Novices, and Secondary Knowledge Miners.

In addition, Markus (2001) also emphasizes the role of KMSs or knowledge repositories and describes their role in knowledge reuse. She divides the repositories into three categories, according to their content and purpose. These are: repositories which are documented only for their producers; repositories which are documented for others who are similar to the producers in the practice community, and repositories which are documented for others who are dissimilar to the producers in both knowledge and outlook. Markus states that successful reuse of knowledge depends on the quality and the content of the KMSs.

Finally she argues that, for successful knowledge reuse, there is a need for two important factors: incentives and knowledge intermediaries. Based on the literature review of knowledge reuse, the current study also concludes that intermediaries represent an important factor for knowledge reuse success. This is explained in the following section. Further explanation of the Markus’ concept of intermediaries appears in the section on intermediaries in KM, later in this chapter.

2.6.3. Knowledge reuse and intermediary

Review of the factors that influence knowledge reuse leads to the argument that (technical and human) intermediaries are an important, even the most important, factor in successful knowledge reuse. The knowledge reusability theory of Markus
also stresses their importance. Moreover, they are important because they mediate between and moderate the influence of other factors on knowledge reuse (Behboudi, 2006b). So, in this study, intermediaries, mainly HIs, are the focus of investigation in successful knowledge reuse.

According to Szulanski (2000), the mere possession of potentially valuable knowledge does not necessarily benefit other parts of the organization. By allowing the emergence of knowledge facilitators, practical knowledge for action is produced and shared (Roth, 2003). For successful knowledge reuse, it is important not only to create good repositories and apply incentives, but also to recognize that the role of intermediaries is necessary to design and support the repositories to make them usable by others (Markus, 2001).

Nevertheless, in spite of the importance of intermediaries, their key functions, and their position in the list of factors which result in better and successful knowledge reuse, “facilitators and intermediaries play a still underappreciated role in knowledge reuse” (Markus, 2001, p. 84).

Although key intermediaries are a component of Markus’ theory, Markus merely pointed to two general intermediaries, the technical and human intermediaries and suggested that the intermediary and the role of IT in this intervention was an “important avenue for future IS researchers” (p. 88). Furthermore, from the literature review, it appears that, apart from Fischer’s (2002) pilot study, no empirical or comprehensive research about the intermediaries and their role in knowledge reuse has yet been done.

With an understanding of the importance of human and technical intermediaries in successful knowledge reuse, and the need for research, it is necessary now to explore the concept of the intermediary in order to develop a clear understanding of the concept prior to the practical research.

2.6.4. The concept of knowledge reuse in this study

As mentioned above, knowledge in this study refers to payload knowledge, which includes all types of knowledge, whether tacit or explicit, required to resolve an applied problem in context, or in other words, any type of knowledge that is needed by knowledge workers to perform their client-relevant tasks. So in this study the reuse and sharing of this type of knowledge is meant. Put simply, knowledge reuse and sharing includes the flow or process of knowledge from sources to users. There are two main definitions of knowledge reuse in the literature from eminent researchers in this area. In the coming paragraphs, the definitions are presented and discussed and then the definition adopted for use in this study is identified.
Knowledge reuse is defined by Alavi and Leidner (1999) as a process where one individual, or many, within the organization use knowledge created by a different individual or group within the same organization, in order to be more effective and productive in their work. There are some assumptions behind this definition: first, it focuses on internal knowledge for reuse and ignores external knowledge; second, inherently, it includes knowledge sharing and knowledge contribution, because reusing the knowledge of others requires knowledge sharing; third, knowledge in this definition encompasses both tacit knowledge and explicit knowledge.

On the other hand, there are different assumptions behind Markus (2001) concept of reuse since, first, it focuses on explicit and codifiable knowledge and excludes tacit knowledge; second, knowledge sharing is not considered part of knowledge reuse nor is it emphasized; third, knowledge can include both internal and external knowledge.

In this study we are interested in knowledge reuse because we want to understand how different intermediaries can facilitate or intermediate increased and improved knowledge (payload knowledge) reuse in a knowledge-intensive firm. Having this in mind, this study’s assumptions about knowledge reuse, which are taken from the above two definitions, are:

- Both internal and external knowledge are included
- Both tacit and explicit knowledge are included
- Knowledge sharing is considered a part of the knowledge reuse process,

Therefore, this study’s definition of knowledge reuse is a combination of those two main definitions. It includes tacit as well as explicit knowledge because in a knowledge-intensive firm tacit knowledge is important and valuable knowledge that needs to be included in the facilitation of knowledge reuse. It includes external knowledge as well as internal knowledge because payload knowledge includes both types of knowledge. It includes knowledge sharing because they are inter-connected concepts. Indeed knowledge sharing is an integral part of knowledge reuse because, without knowledge sharing, knowledge reuse is incomplete. So we define the knowledge reuse as:

*Processes of capturing or documenting, packaging, distributing, and reusing external and internal knowledge, as well as the processes of promoting tacit and explicit knowledge sharing (such as encouraging and providing settings for tacit and explicit knowledge sharing).*

Our definition of knowledge reuse is similar to the concept of knowledge transfer of Majchrzak et al. (2004) who regard knowledge transfer as including knowledge sharing (the process of capturing an entity’s knowledge) and knowledge reuse (the process of locating and using shared knowledge). Therefore, in this thesis, the terms, knowledge reuse and sharing are used interchangeably although sometimes, if the
focus is on one particular aspect, one or the other may be used according to the context.

2.7. Intermediaries’ Concept and Theoretical Background

The concept of the intermediary is a key concept in this study and is therefore the focus of this section and sections 2.8, and 2.9, which present a review of the literature on intermediaries. Section 2.7.1 reviews the theoretical studies on the intermediary or broker in general. It also includes non-practical studies regarding intermediaries in the context of KM but, because there is no major theory regarding the intermediary in KM or in knowledge reuse, the main focus of the review is on practical studies. Section 2.7.2 briefly reviews the practical studies on (intra-organization and inter-organization) intermediaries in areas closer to KM and knowledge to see what roles they play and what is being intermediated. Finally, section 2.7.3 presents the concept of the Knowledge intermediary adopted for the purpose of this study.

2.7.1. Theoretical background

The notion of brokerage or the intermediary has contributed significantly to our understanding in various research areas such as entrepreneurship, corporate profitability, organizational innovation, and organizational promotion (Khurana, 2002). However, studies about the intermediary are largely descriptive rather than theoretical.

Intermediary studies in some fields such as marketing focus mainly on social network theory and the concept of the structural hole of Burt (1992). Networks reside in societies such as organizations and communities of practice, in which individuals variably connect with each other for different purposes. Sometimes people connect with each other through several intermediaries. At other times there are structural holes between clusters and people are not connected (Burt, 1992). In this situation, the brokerage concept is important and intermediaries can increase social capital by connecting more people where that connection is beneficial. Brokerage is the bridging of the gap among people or groups to create a connection; it introduces a person or group to new sources of knowledge or ideas. Brokers stand at the intersection of social communities, and create value by bridging the communities. Depending on the type of network, there may be opportunities for brokerage or not. But, in many cases the broker should be defined clearly (Burt, 2005).

Specifically, Burt (1999) investigated the role of opinion leaders whom he called opinion “brokers” within and between groups; these brokers transmit information across social boundaries. Opinion brokers connect or create a bridge between individuals who would otherwise be disconnected in a network where it would be rewarding for them to be connected. They “are not people at the top of things so much as people at the edge of things; not leaders within the group so much as brokers
between the groups” (p. 51). Consequently, they do not necessarily have superior authority or special attraction, but, rather, are identified by functions (in making innovation contagious) and structural location. Opinion brokers have “strong relationships between weakly equivalent people”. According to Burt (1999), social capital means that “people who do better are better connected” and those who play the role of opinion brokers can have better career and income advantages. The opinion broker’s leadership can now be identified with network entrepreneurs who are rich in social capital, and can be at a competitive advantage in a labour market because they:

- monitor information more effectively than bureaucratic controlled methods;
- move information faster, and to more people, than memos or other similar means; and
- offer inexpensive coordination, and are highly mobile relative to bureaucracy, easily shifting network time and energy from one solution to another.

According to Snow et al. (1992 in Burnett et al, 2002) there are three main brokering roles within a network: first, the network architect who designs and builds the network, second, the lead operator who organizes and manages the members, and finally, the caretaker, who maintains the integrity of the network. Also Burnett et al. (2002) mentioned some business objectives for a self-brokered network [Stretch Performance Network (SPN),] which play an intermediary role among the organizations of an industry, as a network broker in developing and running KMSs, encouraging knowledge sharing, and collecting and disseminating knowledge.

Schultze and Orlikowski (2004) used brokering as a central concept in their study about the use of IT in network relations among firms. They believe the role of intermediaries in networks is important and growing increasingly in an IT-mediated market, particularly in marketplaces that are characterized by complexity, uncertainty, and information overload. They regard brokering as “a structural arrangement in which one actor mediates exchanges between two other actors who are not directly linked” (p. 89).

There are also studies that investigated the role of HRM in social networks and facilitating knowledge reuse and sharing. For example, Zupan and Kase (2007) reveal the role of HRM in developing social networks for knowledge reuse and sharing as well as knowledge creation in knowledge-intensive firms, especially in firms that have a decentralized HRM function, because in this type of firm, their structural position in the knowledge network enables them to develop social capital. In another study, Swart and Kinnie (2003) examined the roles and methods of HR policies and processes in overcoming the barriers to knowledge sharing and building social capital in knowledge-intensive firms. They indicated the roles of HR policies and processes in facilitating social capital by understanding the needs of knowledge workers and the interconnecting of knowledge.
Fernandez and Gould (1994) found five distinct types of broker role in inter-organizational relations depending on the group to which the broker belongs. The first type is the liaison role, a brokerage relationship in which all three actors belong to different groups such as union-management negotiations in inter-organizational brokerage relations. The second type is the representative role, in which a member of a subgroup communicates with outsiders, for example, when a leading firm in a particular industry acts as spokesman for the whole industry. The third type is the gatekeeper role, in which the broker gathers resources, screens them from outsiders and distributes them to his/her own subgroup. In the fourth type the intermediary belongs to a different group while the two principal actors share the same subgroup. This broker is called an itinerant. In the final brokerage relation the three actors belong to the same group. This role is called the local broker or coordinator, in which there is no partition between actors but, rather mediation between actors. The broker roles are summarized in Figure 2.3 below.

![Figure 2.3. Five types of brokerage relationship according to Fernandez and Gould (1994)](image-url)
Of the five types of brokerage role identified by Fernandez and Gould (1994), the representative, gatekeeper, and coordinator, are applicable for human knowledge intermediaries (Behboudi and Hart, 2006).

Organizational network analysis (ONA) is a concept which is relevant to the role of intermediaries and functions in organizations. This concept is closely related to social network analysis through which collaboration in strategically important groups such as top leadership networks is facilitated (Cross et al., 2002). The ONA notion has been developed to connect organizational members so that they can share their knowledge. Indeed, ONA “has become the standard method for diagnosing the relationships among individuals and groups inside firms and across organizational boundaries” (Anklam et al., 2005, p. 540). In addition ONA is used as a managerial tool to support efforts to create and increase awareness of where knowledge exists in an organization. Moreover, as a diagnostic tool, ONA clarifies existing networks and patterns of relationships and helps leaders to determine where establishing or improving interaction will provide greater returns for the organization. If ONA is accomplished in an organization, it helps employees to leverage the knowledge and expertise of peers more naturally. It also helps managers as facilitators and interpreters in bridging the work of staff (Anklam et al., 2005).

The position of the intermediary in a network enables intermediation. According to Aalbers et al. (2004), knowledge brokers are employees who act as a link between two or more employees for knowledge transfer. However, not every actor can fulfil this role because brokers need appropriate network positions to access a variety of knowledge sources. Externally-oriented knowledge intermediary roles (representative, itinerant broker and liaison) in the formal network contribute to knowledge transfer between the units of an organization (Aalbers et al., 2004).

In regard to KM, a community of practice is an area that uses the concept of the intermediary. In the context of a community of practice internal brokers have been defined as “individuals who provide connections between communities of practice, transfer elements of one practice into another, enable coordination, and through these activities can create new opportunities for learning” (Wenge, 1998, p. 109). For active and sustainable communities of practice, there is a need for a dedicated facilitator who spends significant time and effort (Markus, 2001). Agents as brokers offer many value-added services to communities of practice, including creating a context with shared and stable syntax and ensuring appropriate communication channels between sources and targets of knowledge (Datta, 2007).

Davenport and Prusak (1998) described a knowledge market in organizations in which three players, namely, buyers, sellers and brokers, are involved in knowledge transactions. Knowledge buyers are those who look for insights, judgments and understanding in resolving a complex issue. Knowledge sellers are staff who have a reputation for holding one or more types of knowledge; they may prefer to share or
hoard their knowledge. As key players, knowledge brokers, who may be called gatekeepers or boundary spanners, connect buyers to sellers. According to this study, about 10% of managers are potential brokers who explore what people do. However, there are also hidden and common brokers such as corporate librarians who serve the whole organization as information brokers creating two types of connections: people-to-people and people to text (people to KMSs as well). They are mostly familiar with the knowledge needs and the sources and they are in essence natural brokers. Davenport and Prusak acknowledge that, in general, all types of brokers are underrated and unappreciated in organizations.

In her initial theory of knowledge reusability, Markus (2001) argued that for successful knowledge reuse, (human) intermediaries are necessary “to develop and maintain repositories and to facilitate the process of reuse” (p. 79). She concentrated on mostly human intermediaries and their roles in relation to technical intermediaries, and maintained that, intermediaries are necessary to re-purpose the repositories that are developed by knowledge producers and to make them usable by others. Technological inaccessibility, and/or the lack of end-user support in the use of technology may cause the KMS to fail; therefore, expert intervention is necessary for successful knowledge reuse. Since produced knowledge may not generally be immediately usable by others, organizational work by intermediaries is necessary to develop local knowledge for wider use.

Markus (2001) defined a knowledge intermediary as one who “prepares knowledge for reuse by eliciting it, indexing it, summarizing it, sanitizing it, packaging it, and who performs various roles in dissemination and facilitation”. Markus (2001) regarded her theory as an initial theory and this research aims to extend it.

From the literature review, consistent with the finding of researchers such as Pawlowski and Robey (2004) it appears that there is no existing knowledge intermediary or brokering theory. So, this study is guided by prior literature on intermediaries in different contexts. The research is therefore largely exploratory and descriptive. Analysis of the prior research on intermediaries will help to provide the initial research framework.

2.7.2. Intermediaries in different fields

Intermediaries play a range of different and important roles in various environments and contexts. One traditional and well-known area in which intermediaries or brokers take many important roles is marketing. For example, they support and mediate in the exchange of products and services between producers and customers (Vishik and Whinston, 1999). Here we introduce studies on intermediaries that are related to KM or knowledge more broadly. Further description, including of their roles, appears in Table 2.9.
Some studies have focused on intermediaries as an organization or a person while others have focused on intermediaries as a process (Howells, 2006). Intermediaries improve the business and knowledge or information transfer in many areas. For example, intermediaries in a regional knowledge system transfer knowledge within the region and improve the success of the region as a whole (Smedlund, 2006). Innovation intermediaries support innovation processes through activities such as information scanning and gathering, and facilitating communication (Howells, 2006). Decision support systems (DSS) intermediaries provide domain-specific decision support services (Lang and Whinston, 1999).

Another area in which intermediaries have been studied and play an important role is the field of the World Wide Web or the internet (Dikaiakos, 2004, Barrett and Maglio, 1998, Vishik and Whinston, 1999). In the context of the World Wide Web, almost anybody can produce, share and distribute information. This results in many problems for users, such as difficulty in evaluating the quality of the information, information overload, and searching difficulties. These issues require both human and technical internet-based information intermediaries.

Intermediaries influence the knowledge flow between organizations. For example, information intermediaries establish relationships to enable the knowledge to be transferred or reused and affect knowledge exchange and sharing quality in the internet environment (Vishik and Whinston, 1999). Software entities as intermediaries mediate the interaction between clients and servers on the Internet (Dikaiakos, 2004). Intermediaries in the information marketplace add value to an information product or perform a service for information customers and/or providers (Hauswirth et al., 2001). In the field of marketing, advertising, as a knowledge intermediary, particularly in the virtual and knowledge-based world, adds to the value of knowledge being transferred (Millar and Choi, 2003).

Intermediaries are not only important in facilitating interaction between a range of different organizations, they are also important within an organization. Information intermediaries as systems or human agents, for example, mediate positively between producers and consumers of information within organizations (Womack, 2002) and (Lee and Cho, 2005). Information (human) intermediaries in Computer-Based Information (CBI) mediate the CBI environment by processing the information (Kraemer et al., 1993). Human intermediaries also mediate in the world of patent information retrieval on the internet (Fletcher, 2001).

Other studies have investigated the role of facilitators in Group Decision-making Support System (GDSS) (Belton and Hodgkin, 1999, Dickson et al., 1993). One study (Dickson et al., 1993) examined the role of two kinds of facilitators who support users in their use of GDSS technology: chauffeur-driven and facilitator-driven. In chauffeur-driven facilitation an intermediary is used to lessen the mystique of the GDSS technology for users. In facilitator-driven facilitation, the facilitator

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assists the group with its group process as well. The results of this study indicated that the existence of either of these leads to better performance of the group than user-driven operation of a GDSS. So, when IT is involved, some of the roles of intermediaries are IT-oriented and others are non IT-oriented.

2.7.3. The concept of knowledge intermediary in this study

Dictionary definitions of an intermediary include the following: A go-between or mediator; acting between persons, parties, etc.; serving as an intermediate agent or agency; a medium or means (Intermediary. (n.d.). The American Heritage® Dictionary of the English Language). An intermediary, therefore, is an agent who intermediates or facilitates something or some transaction between two persons or parties. In organizations, in the context of knowledge reuse and sharing, knowledge or the knowledge flow is the “something” that needs to be intermediated between two persons or parties. Again, in the context of knowledge reuse and sharing, there are two main sides or parties: the knowledge holder on one side and the knowledge user on the other; knowledge source/owner on one side and the knowledge destination/seeker one the other.

Markus (2001), proposing the notion of the knowledge intermediary in the theory of knowledge reusability, stated that the knowledge intermediary can be either a human or a technology intermediary, but both facilitate the knowledge reuse process. The intermediary can directly intermediate in the knowledge flow from knowledge holder or source to user. One such intermediary is a knowledge repository which is situated directly between the knowledge source and the user. Alternatively, an intermediary can indirectly facilitate the knowledge flow by, for instance, encouraging knowledge holders to share with users. So an agent (either technology or human) both directly intermediates and indirectly facilitates knowledge flow. At this stage, we can define the concept of the knowledge intermediary as follows:

\[
\text{Knowledge intermediary refers to one or more agents, including human and technology, which facilitates or intermediates directly or indirectly explicit and tacit knowledge reuse and sharing in an organization.}
\]

In general, the word “intermediary(ies)” is used alone in this thesis to mean “knowledge intermediary(ies)”. Also, the terms intermediation and facilitation are used interchangeably.

The next section reviews human and technical intermediaries in KM and knowledge reuse and sharing.
2.8. Human Intermediaries in KM

Studies on the role of HIs in KM are scattered and their focus varies. In this section, the concept, definition, application, and functions of HIs which may also be called other names, such as broker and agent, are reviewed. The summary of these studies is presented in Table 2.10. This lets us understand, locate and define the concept of knowledge intermediary and the roles and functions of the intermediaries in the context of organizational knowledge reuse and sharing. Due to the lack of intermediary theory, this literature review is important and will be the basis from which to propose the initial framework. Moreover, for the purpose of research question three, the role of HIs in high-value knowledge is reviewed briefly in this section.

Davenport et al. (1998) found one similarity in all KM projects, which was the importance in general of the human responsible or the person who facilitates KM, ranging from having a chief knowledge officer (CKO) to seventy positions designated to support KM. According to this study one of the eight factors for successful KM is the technical and organizational infrastructure, which includes intermediaries. However, they indicated difficulty and ambiguity associated with the HIs and their functions and positions.

It is usual for organizations to have a KM department that facilitates knowledge reuse and sharing. However, for successful KM, the creation of relevant roles and skills is also required (Davenport and Prusak, 1998). Some studies have discussed the need for intermediaries such as librarians and knowledge managers in KM (Birchall et al., 1994). Recently, interest in “knowledge workers” has increased, and a new series of job titles, such as CKO, community of practice coordinator and chief learning officer has emerged (Moffett et al., 2003), because KM and knowledge creation have implications for both organizational management and structure (Nonaka and Takeuchi, 1995).

Recently, as KM has begun to attract more attention, organizations have begun to employ staff with a range of different titles whose job it is to facilitate knowledge flows. Jashapara (2004) listed several titles, which appear in Table 2.7. Other new knowledge jobs in addition to the technically-oriented jobs are knowledge integrators, knowledge engineers, librarians, synthesizers, reporters and editors (Davenport and Prusak, 1998).
Table 2.7. Typical KM jobs and titles for human intermediaries (Jashapara, 2004)

<table>
<thead>
<tr>
<th>Chief knowledge officer</th>
<th>Director of knowledge management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director of intellectual capital</td>
<td>Knowledge department manager</td>
</tr>
<tr>
<td>Knowledge manager</td>
<td>Knowledge economist</td>
</tr>
<tr>
<td>Knowledge consultant</td>
<td>Knowledge resources librarian</td>
</tr>
<tr>
<td>Knowledge management analyst</td>
<td>Knowledge administrator</td>
</tr>
<tr>
<td>Knowledge coordinator</td>
<td>Knowledge management project manager</td>
</tr>
</tbody>
</table>

KM roles have been categorized in a variety of different ways. In one categorization, the knowledge broker is regarded as just one of those roles. Maier and Remus (2002) indicated that one of the KM initiatives or activities is establishing a KM department and KM roles. These roles include CKO/knowledge manager, knowledge broker, subject matter specialist, boundary spanner, community manager, and knowledge worker/participant. They describe the knowledge broker as one who “helps participants to locate the knowledge or experts needed, helps to navigate the organizational knowledge base” (p. 115).

That CKOs can be regarded as HIs, in terms of effective KM strategies and techniques, was explored by Jones et al. (2003). CKOs, or knowledge champions, play the role of change agents, innovators, and opinion leaders to facilitate the acquisition and use of knowledge in firms by using organizational memory systems effectively. A CKO needs technical, human, and financial skills to accomplish his/her responsibilities and “at a minimum, a CKO should have a clear understanding of KM concepts, familiarity with knowledge-oriented organizations and technologies, and a strong appreciation for and grounding in the primary processes of the business” (Jones et al., 2003, p. 51). Finally Jones et al. (2003) offered KM professionals the following framework for facilitating KM activities:

- Creating positions of dedicated organisational innovators who will facilitate the effective acquisition of new knowledge from sources outside the organisation e.g. the CKO.
- Using CKOs and other knowledge champions to facilitate knowledge sharing and the effective use of organisational memory by working with opinion leaders throughout the organisation to codify and institutionalise new knowledge, and also by identifying and satisfying the knowledge needs, wants, and expectations of organisational users and the organisation in general.
- Using knowledge champions to create and update directories for appropriate knowledge centres (pp. 56-59).

Senior-level professionals are also regarded as knowledge intermediaries. Weiss (1999) stated that Professional Service Firms can further facilitate the connection of embedded knowledge by identifying and promoting three brokering roles for senior-level professionals. These roles involved identifying, gatekeeping and filtering.
The emergence of knowledge facilitators has led to the production and sharing of practical knowledge for action (Roth, 2003). The knowledge facilitator plays five roles: as a catalyst of knowledge creation, as a coordinator of knowledge creation initiatives, as a guide towards the company's knowledge vision, as a builder of a caring climate by raising the level of trust, and finally, as an enabler of a sharing culture. Roth (2003) also believed that the knowledge facilitators are not the major carrier of knowledge. Rather they function as facilitators of the action. Furthermore, knowledge facilitators are necessary for establishing an appropriate enabling context. Moreover, the knowledge facilitator process involves all individuals (both senders and receivers) in sharing knowledge on equal terms and, therefore, facilitators enable both a sharing and a caring ground for knowledge creation.

Cillo (2005) investigated the role of internal knowledge brokers in absorbing and sharing market knowledge for innovation. She regarded internal knowledge brokers as “individuals or teams who manipulate market knowledge to facilitate the process of internal transfer between different groups or communities” (p. 405). Cillo (2005) also claimed that, internal knowledge brokers help transfer complex knowledge between different parties that are not directly connected and interact only rarely. Cillo (2005) assigned different roles and typologies for internal knowledge broker, based on the level of knowledge complexity and cognitive distance of both knowledge producers and users (Figure 2.4). Complex knowledge, such as tacit knowledge, needs to be codified, if possible, in order to be ready for replication and reuse. Cognitive distance, which refers to different frameworks and the language of knowledge producers and users, also makes knowledge transfer difficult (Cillo, 2005). To overcome these problems, the presence of internal knowledge brokers is necessary. According to this model, when the knowledge is highly complex and the cognitive distance is high the knowledge broker is required to interpret and manage market knowledge. However, if both of them are low then the (information) broker just transfers knowledge.

<table>
<thead>
<tr>
<th>Cognitive distance between the contexts</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge coder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selecting the knowledge to be transferred and codifying it in a coherent language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pure knowledge broker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpreting and managing market knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information broker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pure transfer of market information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated knowledge broker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessing and transferring market knowledge by directly interacting with the two parties needing to share knowledge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2.4.** Typologies of internal knowledge brokers (Cillo, 2005, p. 406)
Another recent study of intermediaries in KM was conducted by Datta (2007), who specifically scrutinized the place of intermediaries in knowledge creation and application. He saw KM as an agent-mediated series of knowledge transformations, from data to information to knowledge to creativity to innovation and finally to diffusion (Table 2.8). Datta proposed an agent-mediated knowledge-in-motion (KiM) model, in which the human agent plays different roles during different stages of knowledge transformation, including Scout, Translator and Interpreter, Coordinator, Ambassador, and Guard. Different attributes of human and software agents were also described in the model.

Table 2.8. Agent typology, roles, and attributes in KM (Datta, 2007)

<table>
<thead>
<tr>
<th>Agent Typology</th>
<th>KM Phase</th>
<th>Agent Role</th>
<th>Software Agent Attributes</th>
<th>Human Agent Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Agents</td>
<td>Data to Information</td>
<td>Scout</td>
<td>Modularity and Standardization</td>
<td></td>
</tr>
<tr>
<td>Knowledge Agents</td>
<td>Information to Knowledge</td>
<td>Translator and Interpreter</td>
<td>Rule-Based Reasoning and Combination</td>
<td>Socialization and Externalization</td>
</tr>
<tr>
<td>Creativity Agents</td>
<td>Knowledge to Creativity</td>
<td>Task Coordinator</td>
<td></td>
<td>Coordination and Integration</td>
</tr>
<tr>
<td>Innovation Agents</td>
<td>Creativity to Innovation</td>
<td>Ambassador</td>
<td></td>
<td>Assessment and Championing</td>
</tr>
<tr>
<td>Diffusion Agents</td>
<td>Innovation to Diffusion</td>
<td>Guard</td>
<td></td>
<td>Control and Direction</td>
</tr>
</tbody>
</table>

The place of information or IT professionals in organizations and their roles as knowledge intermediaries are of interest to some KM or IS researchers. One study by Southon et al. (2002) revealed a range of different and even problematic, yet, important, roles in law firms. Another study by Pawlowski and Robey (2004) investigated the ways that the work practices of IT professionals reflect a knowledge broker role. They found that IT professionals as knowledge brokers facilitate the knowledge flow about “IT and business practices across the boundaries that separate work units within organizations”. Their proposed framework (Figure 2.5) suggested that the brokering practices are conditioned by two structural technical factors. In addition, they identified the following knowledge brokering practices:

- Crossing boundaries (gaining permission to)
- Surfing and challenging assumptions
- Translation and interpretation
- Relinquishing ownership of knowledge

Because of the position of IT professionals in organizations and existence of the KMS as a boundary object, the specific brokering roles or activities of IT
professionals have two consequences. These are facilitating knowledge transfer between IT and user organizations, and facilitating knowledge transfer between and among user organizations.

<table>
<thead>
<tr>
<th>Level of Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural Conditions:</strong></td>
</tr>
<tr>
<td>• Decentralized business units</td>
</tr>
<tr>
<td>• Federated IT structure</td>
</tr>
<tr>
<td><strong>Structural Consequences:</strong></td>
</tr>
<tr>
<td>• Knowledge transfer between IT and business users</td>
</tr>
<tr>
<td>• Knowledge transfer between business users</td>
</tr>
<tr>
<td><strong>Technology Conditions:</strong></td>
</tr>
<tr>
<td>Shared information systems as boundary objects</td>
</tr>
<tr>
<td><strong>Brokering Practices:</strong></td>
</tr>
<tr>
<td>• Gaining permission to cross boundaries</td>
</tr>
<tr>
<td>• Surfacing and challenging assumptions</td>
</tr>
<tr>
<td>• Translation and interpretation</td>
</tr>
<tr>
<td>• Relinquishing ownership of knowledge</td>
</tr>
</tbody>
</table>

**Figure 2.5.** Knowledge brokering by IT professionals (Pawlowski and Robey, 2004, p. 663)

Interestingly, healthcare KM places a greater value on HIs. Fennessy and Burstein (2007) studied the role of intermediaries in meeting the information needs of healthcare professionals. To understand the roles of intermediaries, they compared the decision-making performance of two groups of practitioners, one of which uses intermediaries to search for and appraise the knowledge.

They found that intermediaries can help decision-making in the organization by understanding healthcare and the decision relevant policies. Because they are in a position that allows them to have access to knowledge resources and to contribute to them, they have specific skills, time and expertise. These skills include finding knowledge easily and quickly and filtering it to increase the quality of knowledge. Usually, users lack these characteristics, which makes intermediaries more vital for
organizations. Moreover, intermediaries assist users to clarify and articulate their problems or questions, as well as their information needs.

In the context of healthcare DSS, intermediaries "can be considered as a part of a socio-technical DSS" (p. 32), because they support both task performance and KM by activities that include searching relevant information for practitioners, evaluating the value of the information, and adding metadata.

Librarians as HIs in law firms are also the subject of investigation in some studies. Du Plessis and du Toit (2006) stated that the roles of librarians as perceived by lawyers are information management, providing access to information, searching for information, providing timely information, and, to some extent, training in ICT and evaluating the authenticity of knowledge. They confirmed the vital and unappreciated role of librarians in KM processes as follows:

There was strong indication that the role of the librarian should not be disregarded in the legal research process. An indirect assumption that was arrived at was that librarians should increasingly take on the challenge of developing or improving on current systems designed for typical KM activities that are aimed at law firm competitiveness, especially with regards to packaging individuals' knowledge into information products (p. 370).

A summary of the researches on intermediaries in KM is presented in Table 2.10. It can be concluded that HIs perform a very important and inevitable role in KM and knowledge reuse; they perform a wide variety of functions. Appendix A lists, categorizes, and aggregates these to extrapolate appropriate HI functions for specifically facilitating knowledge reuse and sharing. The review of the HI literature indicates that some HI roles relate directly to IT and its application, such as reducing the mystique of technology, because KM facilitation partly involves IT-based systems and tools. Others, however, which are also important, such as connecting people, are not related to IT. These functions facilitate knowledge transfer both directly and indirectly. Moreover, studies show both the importance of investment in intermediaries, and the difficulty and ambiguity associated with the functions and positions of intermediaries.

2.8.1. Human intermediaries and high-value knowledge

The literature on high- and low-value knowledge have reviewed before and indicated that tacit knowledge is generally regarded as more important and valuable. This section investigates which intermediary is more appropriate for high-value knowledge.

The tacit dimension of organizational knowledge is the major concern of knowledge-intensive firms and finding ways of activating the tacit knowledge for organizational
benefit is essential (Bhardwaj and Monin, 2006). Explicit knowledge, or know-what, can be easily codified and transferred (share and reuse). However, it seems difficult or sometimes even impossible to transfer tacit knowledge or know-how successfully. Nevertheless, this does not mean that this type of knowledge can not be transferred at all.

One model for knowledge creation which indicates the conversion of tacit knowledge into explicit knowledge and the reverse was offered by Nonaka and Takeuchi (1995). The model appears below in Figure 2.6.

![Figure 2.6. Models of knowledge conversion by Nonaka and Takeuchi (1995, p 62).](image)

The model involves four processes: Socialization, Externalization, Internalization, and Combination. In each process, knowledge is transferred and converted from one form to another. According to this model, tacit knowledge can be transferred (shared and reused) to others through socialization.

Sharing and reuse of tacit knowledge requires socialization and externalization, which can be facilitated by HIs through activities such as setting meetings. According to Nonaka and Takeuchi (1995, p 62) “socialization is a process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills”. Socialization also is the process of communicating and promoting tacit knowledge (Hall and Andriani, 2003). According to Argote and Ingram (2000 in Hoe, 2006) an important feature in socialization is that tacit knowledge is exchanged among people and without impersonal media. Therefore, in this thesis, the term socialization refers to the exchange of tacit knowledge among organizational members during the social interactions and through shared experiences.

According to Nonaka and Takeuchi (1995, p 64) “externalization is a process of articulating tacit knowledge into explicit concepts”. Tacit knowledge is unique and
for externalization and exploitation it is necessary to build communities of practice and other facilities for cross-functional teams (Mohamed et al., 2004).

So, tacit knowledge can also be transferred by externalization. In this respect the HI can and should facilitate this externalization by activities such as encouraging people to contribute their knowledge and help in codifying knowledge. These activities of the HI regarding tacit knowledge and people in knowledge-intensive firms are more important, because in the KM practices of this type of organization, people management is a significant dimension (Robertson and Hammersley, 2000).

Another reason that indicates the importance and suitability of the HI for the high-value knowledge flow is the inevitable roles of the HI in relation to technical intermediaries for high-value knowledge. These roles include activities such as controlling the quality of knowledge in KMSs and adding metadata. There are many studies in this respect, some of which have been reviewed earlier in this chapter. For example, Fennessy and Burstein (2007) maintained that one of the less explored roles for intermediaries is the role of turning information into meaningful knowledge, by searching, acquiring, sifting, and interpreting information. Also, Terrett (1998) listed four functions required to add value to information in Infobank (a KMS) in law firms. The functions that can be performed by a dedicated HI are contextualization, categorization, correction, and condensation.

Furthermore, Garud and Kumaraswamy (2005) suggested that the KM managers (HIs) must intervene to steer a KMS and make it useful. Vishik and Whinston (1999) argued that lack of information intermediaries may lead to deterioration in the quality of internet-based information, because intermediaries reward high quality information producers by introducing them to the users and thus provide an incentive for them. They consider adding value and providing high quality knowledge to users an important activity of HIs because intermediaries control the quality of the informational products before distribution. They acquire high quality information from reputable sources, screen it and categorize it. Intermediaries thus make their repositories more comprehensive while also observing qualitative parameters in this intermediation.

Media richness theory can also explain our claim. Based on this theory, Murray and Peyrefitte (2007) studied knowledge and information transfer through high and low richness media. They found that low-media richness technology (databanks, e-mail, and teleconferencing) is used more for information transfer than for know-how transfer purposes. However, they did not confirm that high-media richness technology such as videoconferencing is used for knowledge transfer. In contrast, high-media richness meetings, such as face to-face meetings and informal/social events, are used more for know-how transfer than for information transfer purposes. Therefore, because IT is generally not a rich medium, it may not be able to facilitate high-value knowledge.
Therefore, for two major reasons HI, in contrast to IT, is a more appropriate intermediary for high-value knowledge reuse and sharing. First, in regard to tacit knowledge HIs are necessary to facilitate sharing and reuse. Second, even to acquire high-value knowledge through technical intermediaries (such as KMSs), HIs are necessary to conduct knowledge work on the KMSs. The inappropriateness of IT for facilitating high-value knowledge is explained below in section 2.9.
Table 2.9: Summaries of the notion of intermediary in close disciplines or areas to KM and knowledge reuse

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Area</th>
<th>What /who is intermediary</th>
<th>What is facilitated or intermediated</th>
<th>Direct or indirect roles or functions Intermediary</th>
<th>Summary /notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fernandez and Gould (1994)</td>
<td>Inter-organizational relations intermediaries</td>
<td>Institution or individual</td>
<td>Anything can be</td>
<td>- Liaison, representative, gatekeeper, itinerant, and local broker or coordinator</td>
<td>Found types of broker roles in interorganizational relations depending on the group they belong</td>
</tr>
<tr>
<td>Smedlund (2006)</td>
<td>Regional intermediaries</td>
<td>Institution</td>
<td>Intermediaries in a regional knowledge system,</td>
<td>- The creation and supporting of the network dynamics, - forming shared innovation strategies between the actors” - Transfer knowledge inside the region and improve the success of the region.</td>
<td>Regional intermediaries are institutions such as chambers of commerce, that have the most important role in the creation and supporting of network dynamics</td>
</tr>
<tr>
<td>Howells (2006)</td>
<td>Innovation intermediaries</td>
<td>Organization or body; (and process)</td>
<td>Innovation</td>
<td>- Information scanning and gathering function and - Communication function. - Foresight and diagnostics, -Scanning and information processing, -Knowledge processing, -Gatekeeping and brokering, -Testing and validation, -Accreditation, -Validation and regulation, -Protecting the results, -Commercialization, -Evaluation of outcomes.</td>
<td>They support the innovation processes by “helping to provide information about potential collaborators; brokering a transaction between two or more parties; … and helping find advice, funding and support for the innovation outcomes of such collaborations” (p. 720).</td>
</tr>
<tr>
<td>Lang and Whinston (1999)</td>
<td>DSS in electronic market</td>
<td>Virtual company</td>
<td>Transactions in electronic market</td>
<td>- Facilitates transactions in four ways: - Match buyers with sellers; - Buy goods from sellers and sell them to buyers; - Buy goods and sell them after modifications; and</td>
<td>DSS intermediary is a virtual company who act in intermediating customers, their needs, available DSS tools, and the producers of DSS technology in electronic market</td>
</tr>
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<td>Researchers</td>
<td>Area</td>
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<tr>
<td>Dikaiakos (2004)</td>
<td>WWW intermediary</td>
<td>Software entities</td>
<td>Clients and servers in internet environment</td>
<td>- Improving the performance of Web requests, - managing information overloading, - Supporting seamless access to Web services - Relaying requests and replies and transcoding content-formats, -Caching, filtering, and personalization (p. 444).</td>
<td>Software entities that mediate the interaction between clients and servers of the WWW to improve the quality of end-user's Web experience</td>
</tr>
<tr>
<td>Vishik and Whinston (1999)</td>
<td>WWW &amp; marketing</td>
<td>Internet or information intermediary (both)</td>
<td>Information providers (vendors) and users (customers) in internet</td>
<td>- Improving quality of information resources and efficiency of information seeking, - Promoting trusted relationships with primary information vendors and customers (P. 161).</td>
<td>Intermediaries help users to get best result or high quality knowledge with less effort; and provide incentive for high quality information producers.</td>
</tr>
<tr>
<td>Hauswirth et al. (2001)</td>
<td>Information marketplace intermediaries</td>
<td>Software or technology</td>
<td>Information customers and/or providers in marketplace</td>
<td>- Classifying of available providers or products such as portals; -Filtering, refining and summarizing the view of existing providers or products; -Qualifying reliability of information products; -Authenticating the identities of customers, providers, and products; -Combining information products;</td>
<td>Intermediaries add value to an information product or perform a service for information customers and/or providers.</td>
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<td>Researchers</td>
<td>Area</td>
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<tr>
<td>Snow et al.</td>
<td>Network</td>
<td>Individual</td>
<td>Network</td>
<td><em>Brokering</em> customers and providers find each other; <em>Mediating</em> and assisting customers and providers to conduct a business.</td>
<td></td>
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<tr>
<td>(1992)</td>
<td></td>
<td></td>
<td></td>
<td>- Brokering roles: The network architect who designs and builds the network, - The lead operator who organize and manage the members, and - The caretaker, who maintains the integrity of the networks</td>
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<tr>
<td>Burnett et al.</td>
<td>Network broker among</td>
<td>Self-brokered network</td>
<td>Knowledge in organizational networks</td>
<td>- Developing and operating a knowledge repository, Encouraging knowledge and experience sharing, Extracting all learning, generic themes of achievement and best practices, and publicizing these for next usage.</td>
<td>The role of intermediaries in networks is important and growing increasingly in IT-mediated market</td>
</tr>
<tr>
<td>(2002)</td>
<td>organizations</td>
<td></td>
<td></td>
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<tr>
<td>Schultze and</td>
<td>Technology-Mediated Network</td>
<td>Internet-based, self-serve</td>
<td>Network relations among firms in</td>
<td>Mediates exchanges between two other actors who are not directly linked</td>
<td></td>
</tr>
<tr>
<td>Orlikowski</td>
<td>Relations</td>
<td>technology</td>
<td>marketplace</td>
<td></td>
<td>The role of intermediaries in networks is important and growing increasingly in IT-mediated market</td>
</tr>
<tr>
<td>(2004)</td>
<td></td>
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<td></td>
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<tr>
<td>Burt (1999)</td>
<td>Networks, Within and</td>
<td>Individual, Opinion</td>
<td>Within and between groups Relationships</td>
<td><em>Connect individuals together who would otherwise be disconnected in a network</em> - <em>Monitor information more effectively; move information faster, and to more people; and offer inexpensive</em></td>
<td>Transmit information across social boundaries.</td>
</tr>
<tr>
<td></td>
<td>between groups</td>
<td>leaders or “brokers”</td>
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<td>Researchers</td>
<td>Area</td>
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<tr>
<td>Womack (2002)</td>
<td>Information distribution</td>
<td>Systems</td>
<td>Producers and consumers of information</td>
<td>- Collect, organize, and distribute information to their clients</td>
<td>Systems within organizations that mediate between producers and consumers of information</td>
</tr>
<tr>
<td>Lee and Cho</td>
<td>Information intermediaries in financial market</td>
<td>An economic agent such as search engines, and librarians</td>
<td>Information</td>
<td>- Support the production, exchange, and use of information - Increase the value of the information for its end user (p. 96). - Reduce the cost (time and effort) of information acquisition and processing</td>
<td>Using them is positively related to the overall extent of information search and influences the probability of using other information sources.</td>
</tr>
<tr>
<td>Kraemer et al.</td>
<td>IS or Computer-Based Information</td>
<td>Individual – Human information intermediary</td>
<td>Application of the Computer-Based Information (CBI)</td>
<td>-Mediate CBI environment for users and serve the executives and managers (satisfy the information need of users) -Do managers delegate the more routinized of their information processing tasks to them</td>
<td>The focus of design efforts for executive information systems or DSS should be much on the information intermediaries</td>
</tr>
<tr>
<td>Dickson et al.</td>
<td>Group decision support systems (GDSS)</td>
<td>Individual (chauffeur-/facilitator-driven)</td>
<td>Group decision support systems (GDSS) technology</td>
<td>- Lessen the mystique of the GDSS technology for users, - Assists the group with its group process</td>
<td>Existence of either of these lead better performances of group than user-driven operation of a GDSS.</td>
</tr>
<tr>
<td>Fletcher (2001)</td>
<td>World of patent information retrieval on internet</td>
<td>Individuals such as librarians</td>
<td>End users need and access to information in the patent information field</td>
<td>- Educating users about complexity of the various information sources and their deficiencies and benefits. - Interpret users’ needs and translate into</td>
<td>Consequences of the Internet – the strategic role of intermediaries in educating end users</td>
</tr>
<tr>
<td>Researchers</td>
<td>Area</td>
<td>What /who is intermediated</td>
<td>What is facilitated or intermediated</td>
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<td>Millar and Choi</td>
<td>Marketing (Advertising)</td>
<td>Advertising, &amp; advertising experts</td>
<td>The company and its product, service or brand and the consumer.</td>
<td>- Facilitate a recipient’s measurement of the intangible value of knowledge received - Give additional meaning mostly to tacit knowledge, facilitating its use, and help to bridge the gap between consumers and producers in measurement of intangible value - “Translates” the intentions of the producer into messages that will be understood.</td>
<td>It evaluates the value and provides more knowledge about products, not just creating an ability to recognize goods from a certain origin, but actually inducing consumers to attribute value, to believe in the brand and to take action.</td>
</tr>
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Table 2.10. Summaries of the studies about intermediary or broker in different aspect of KM

<table>
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<tr>
<th>Researchers</th>
<th>Area</th>
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<th>What is facilitated or intermediated</th>
<th>Direct or indirect roles or functions Intermediary</th>
<th>Summary /notes</th>
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</table>
| Davenport and Prusak (1998) | Knowledge market in organizations | Individual (such as librarians & managers) | Knowledge transaction               | - Explore and observe what people do and who knows what, and get big picture  
- Sever the whole organization as information guide broker connections: people-to-people and people to text                                                                 | Librarians know knowledge needs/sources and due to their condition they are natural brokers                                                                                                                                                       |
| Jones et al. (2003)  | KM                                  | CKOs or knowledge champions         | Knowledge sharing and the use of organizational memory | - Facilitate the acquisition (sharing) and use of knowledge in firms by effectively using organizational memory systems  
- Create and update directories for appropriate knowledge centers.                                                                                                                                                                                                 | Play the role of change agents, innovators, and opinion leaders                                                                                                                                               |
<p>| Maier and Remus (2002) | KM                                  | Human knowledge broker              | Knowledge and KM                    | Helps participants to locate the knowledge or experts needed, and helps to navigate the organizational knowledge base” (p. 115).                                                                 | Knowledge broker as direct intermediary and other roles as indirect intermediary                                                                                                                                 |
| Roth (2003)          | Knowledge creation                  | Knowledge facilitators              | Sharing a caring ground for knowledge creation. | - Catalyst of knowledge creation, - coordinator of knowledge creation initiatives, - guide towards the company's knowledge vision, - builders of a caring climate, - an enabler of a sharing culture | By emergence of facilitators, practical knowledge for action is produced &amp; shared. Facilitators enable both a sharing and a caring ground for knowledge creation.                                                            |
| Aalbers et al. (2004) | Knowledge transfer                 | Knowledge brokers                  | Knowledge between units of an organization. | Act as a link between two or more employees for knowledge transfer                                                                                                                                   | Brokers should have appropriate network positions to access a variety of knowledge sources.                                                                                                                                                       |
| Cross et al. (2002); (Anklam | Collaboration and sharing          | Organizational network analysis     | Collaboration and knowledge sharing  | - Facilitate collaboration and sharing knowledge                                                                                                                                                    | The ONA connect organizational members so they can share their knowledge.                                                                                                                                                                                                 |</p>
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<th>Researchers</th>
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<th>Direct or indirect roles or functions Intermediary</th>
<th>Summary / notes</th>
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| et al. (2005)    | knowledge, & network analysis     | (ONA)                       | in strategically important groups   | - Social network analysis  
- Diagnosing the relationships among individuals and groups inside firms and across organizational boundaries                                        | knowledge                                                                                           |
| Cillo (2005)     | Market knowledge transfer for innovation | Internal knowledge brokers (individuals or teams) | Market knowledge for innovation     | - Absorbing and sharing market knowledge for innovation  
- Manipulate (interpret and manage) market knowledge to facilitate internal transfer  
- Help transfer complex knowledge between different parties that are not directly connected          | Different roles and typologies for internal knowledge broker based on the level of knowledge complexity and cognitive distance |
| Markus (2001)    | Knowledge reuse and KMSs          | Knowledge intermediary      | Knowledge reuse                     | - Abstracting, indexing, authoring, sanitizing and so on; - Developing knowledge map - Filtering and updating knowledge of repository for high quality; - Monitoring and controlling the input of the repository; - Coaching the users; Keeping the community of practice and repository sustainable; - Assisting content authoring; Facilitating knowledge flow | Who “prepares knowledge for reuse and performs various roles in dissemination and facilitation”. |
| Fischer (2002)   | Knowledge reuse (initial study)   | Human and technical intermediaries | Knowledge reuse                     | HIs administrate technical intermediaries                                                                                                               | They improve knowledge reuse when aligned to business imperatives, organizational incentives and reward systems |

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<th>Researchers</th>
<th>Area</th>
<th>What / who is intermediary</th>
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<th>Direct or indirect roles or functions Intermediary</th>
<th>Summary / notes</th>
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<tr>
<td>Datta (2007)</td>
<td>Knowledge creation and application</td>
<td>Human and software agent</td>
<td>Knowledge transformation (creation and application)</td>
<td>- Transforming data to information to knowledge to creativity to innovation and to diffusion by roles of Scout, Translator and Interpreter, Coordinator, Ambassador, and Guard</td>
<td>In spite of many researches in KM, but little attention have been drawn about intermediaries in KM</td>
</tr>
<tr>
<td>Pawlowski and Robey (2004); Southon et al. (2002)</td>
<td>IS and Information professional</td>
<td>Information professional</td>
<td>Knowledge transfer in multi-unit organization</td>
<td>- Facilitate knowledge flow about &quot;IT and business practices across the boundaries that separate work units within organizations&quot; - Crossing boundaries (gaining permission to); - Surfing and challenging assumptions; - Translation and interpretation; - Relinquishing ownership of knowledge</td>
<td>Their finding shows that IT professional’s roles should be reevaluated</td>
</tr>
<tr>
<td>(Weiss, 1999)</td>
<td>Knowledge sharing in Professional Service Firms</td>
<td>Senior-level professionals</td>
<td>Knowledge sharing</td>
<td>- Identifying: helping others to know who to talk or where to look - Gatekeeping: controlling access to the knowledge sources - Filtering: filtering the knowledge to be more useful for users</td>
<td>Facilitating the connection of embedded knowledge by identifying and promoting three brokering roles</td>
</tr>
<tr>
<td>Swart and Kinnie (2003); Zupan and Kase (2007)</td>
<td>HR and KM</td>
<td>HRM and HR policies</td>
<td>Knowledge reuse and sharing</td>
<td>- HR policies and processes in overcoming the barriers of knowledge sharing and building social capital or networks</td>
<td>These studies not directly articulated the intermediary</td>
</tr>
<tr>
<td>Fennessy and Burstein (2007)</td>
<td>KM, decision support system (DSS)</td>
<td>HI (information providers, librarians)</td>
<td>Information needs of healthcare professionals</td>
<td>- Access to knowledge resources and contribute to that - help users to define their problems - Searching relevant information</td>
<td>Help decision making in the organization by understanding healthcare and decisions’ relevant</td>
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<tr>
<td>Researchers</td>
<td>Area</td>
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<td>What is facilitated or intermediated</td>
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<tr>
<td>Du Plessis and du Toit (2006)</td>
<td>KM</td>
<td>Librarians</td>
<td>KM processes</td>
<td>- Information management, providing access to information, searching for information, providing timely information, and to some extent training ICT and evaluating the authenticity of knowledge.</td>
<td>Important finding of study is confirmation of the vital and unappreciated role of his (Librarians) in KM processes</td>
</tr>
<tr>
<td>Terrett (1998)</td>
<td>KM in law firms</td>
<td>Can be HI</td>
<td>Knowledge</td>
<td>- Adding value of information by: contextualization - users can understand the purpose of the information; categorization - users can find the information and other information units that are similar; correction - users have an assurance of quality; and condensation - the information may be summarized allowing for easier searching (p. 72).</td>
<td></td>
</tr>
<tr>
<td>Kraaijenbrink (2003)</td>
<td>Electronic knowledge brokers -design</td>
<td>Electronic knowledge brokers</td>
<td>New product development knowledge</td>
<td>- Visualization; Structuration; Navigation; Adaptation; Valuation; Articulation; Bridging; Accumulation; Publication; Notification; and Facilitation</td>
<td>Support the identification, acquisition and utilization of new product development knowledge</td>
</tr>
</tbody>
</table>
2.9. Technical Intermediaries (KMSs and KM Tools)

IT is an important intermediary in knowledge reuse and sharing. Research questions one and two, which address the issue of the intermediaries and their roles, focus on the HI. But research question three, which focuses on suitable types of intermediary for high-value knowledge, in addition to HIs, involves the technical intermediary as well. Moreover, the HIs' intermediation may involve IT. So, section 2.9.1 briefly reviews the literature on the technical intermediary, KMSs, in facilitating knowledge reuse and sharing. Then section 2.9.2 investigates the suitability of IT in facilitating high-value knowledge reuse.

2.9.1. Technical intermediary in KM

Some intermediary roles can be performed by IT. Indeed, IT affords particular opportunities as an intermediary in knowledge reuse by automatically categorizing, abstracting, filtering, and disseminating documents (Markus, 2001).

One major disagreement among researchers in the KM discipline is the role of IT in KM and whether or not it is central for KM (Metaxiotis et al., 2005). O'Dell et al. (1998) suggest that the relationship between KM and technology is powerful and synergistic and enhances the return and sophistication of both. However, they also believe that technology is just one part of the solution. For example, in regard to knowledge sharing they argue that “IT makes connection possible, but does not make it happen” (p. 86). They even argue that too much emphasis on IT sometimes damages attempts at KM.

IT-based KMSs are also important in knowledge transfer and reuse. A study by Feng et al. (2004/2005) indicated that firms improve their performance significantly through the use of KMS. Results of their study revealed that if managers and employees have necessary access to a knowledge repository, they can efficiently review and effectively retrieve updated knowledge to lead them to better decision-making. Moreover, knowledge repositories can lead to competitive advantage in two main ways: First, by saving time and costs by reusing and analyzing existing knowledge rather than creating new knowledge; and secondly, by helping to create new and deeper knowledge to enhance the quality of services and products offered by the firm (Ofek and Sarvary, 2001). Moreover, effective KMS is important; it can prevent the creation of knowledge gaps when an important employee leaves the firm (Jones et al., 2003). Interest in KMS, is very high across many industries, but the main concerns are how to achieve an appropriate KMS and finding support for contributing to the KMS (Alavi and Leidner, 1999). Merely installing a KMS, therefore, does not guarantee organizational success in KM initiatives (Kankanhalli et al., 2005b).
IT has been seen as an important mediator and enabler of knowledge reuse. In general, technology is a key enabler for the implementation of KM. The role of IT is as an integrator of communications technology with the ability to support communication, collaboration, and the search for knowledge (McCampbell et al., 1999). According to Alavi and Leidner (2001), application of IT can lead to a greater breadth and depth in knowledge creation, storage/retrieval, transfer, and application in organizations. Through KMS, IT can also create both an infrastructure and an environment that contribute to organizational KM, especially in terms of explicit knowledge.

There is “no single role of IT in KM as there is no single technology comprising KMS” (Alavi and Leidner, 1999, p. 114). From one point of view, Bernard (2006) has identified three types of KMSs: Knowledge repositories, Expert directories, and Collaborative tools. There is also a class of specific KMS for which the most important feature is an ability to provide a knowledge base of “lessons learned,” “best practices” or “case analyses”. These KMSs may be built from a combination of any of the above-mentioned generators (Bernard, 2006). However, it should be mentioned that due to the constant development of IT and its application in KM, and various assumptions about knowledge, there are many different classification of KMSs.

Assumptions and views about knowledge have implications for KMSs; for example viewing knowledge as an object leads to having KMSs that focus on gathering, storing and distributing knowledge, while viewing knowledge as a process leads to have KMSs that concentrate on links among sources of knowledge (Nielsen and Michailova 2007). Based on this implication, Nielsen and Michailova (2007), in an attempt to develop a typology of KMSs for Multinational Corporations have identified four types of KMSs: Fragmented KMS, Content-based KMS, Process-based KMS, and Capability-based KMS.

Other researchers, such as Lee and Hong (2002), also believe that advanced IT is a key enabler for implementing effective KM systems; they indicate the main IT applications in the KM life cycle, as shown in Figure 2.7. They recognize appropriate IT tools or systems for knowledge capture, knowledge development, knowledge sharing, and knowledge utilization. Some of the KM technologies used most frequently are Intranets, web portals, content management systems, document management systems, groupware and workflow systems, and help-desk applications (Tyndale, 2002).
In addition, IT performs a range of roles according to the different stages of KMSs in organizations. KM technology comprises four stages of growth, which are illustrated in Figure 2.8. These stages apply also to knowledge-intensive firms such as law firms (Gottschalk and Khandelwal, 2004). The last three stages are stages in which IT is used for facilitating knowledge reuse and sharing.

**Figure 2.7.** IT application and KM life cycle (Lee and Hong, 2002, p. 20)

**Figure 2.8.** Stage of growth model for KM technology (Gottschalk, 2006, p. 112)
Most studies investigate the role of IT in KM and knowledge reuse and sharing without pointing out the notion of the intermediary, while some studies refer specifically to the concept of the intermediary or broker, such as those reviewed above (intermediary in Non-KM) including research by Dikaiakos (2004), Hauswirth et al. (2001), and Schultze and Orlikowski (2004). Another example is Kraaijenbrink (2003), who investigated the conceptual design of electronic knowledge brokers that support the identification, acquisition and utilization of new product-development knowledge.

However, there is disagreement about the role of IT in KM and KMSs. In some cases, researchers have cautioned against the suitability of the technical intermediary for KM. In spite of disagreement about the role of IT in KM, as well as some debate about whether IT inhibits rather than facilitates knowledge creation and use (Cole, 1998), we assume that IT can support knowledge reuse processes through a range of flexible IT based systems, and tools and capabilities. IT can do more than mere traditional storage and retrieval of coded knowledge. However, as IT alone is not an adequate intermediary an increased focus on IT in KM and in knowledge reuse and sharing is inappropriate. A human intermediary is therefore a necessary complement for the intermediation. Even the technical intermediary requires the human intermediary because one of the areas which provides the opportunity for, and needs many and various intermediary roles, is shared KMSs (Pawlowski and Robey, 2004). Therefore, both humans and IT are regarded as knowledge intermediaries in this study (Behboudi, 2006b).

2.9.2. Technical intermediary and high-value knowledge

This chapter earlier has reviewed the literature on high- and low-value knowledge and indicated that tacit knowledge is arguably more important or valuable than explicit knowledge. This section therefore examines the suitability of IT as an intermediary for high-value knowledge. The application and value of IT in KM, may have been overestimated, so it is important, first to investigate whether IT as an intermediary is appropriate for all types of knowledge, especially for tacit knowledge. Then, high-value knowledge flows are divided into high-value knowledge sharing and high-value knowledge reuse flows (finding and receiving knowledge from KMSs) to examine the respective roles of IT in those flows.

(1) Drawbacks of the technical intermediary in KM

The application and contribution of IT in KM and knowledge reuse is reviewed above. The main assumption behind using IT regards knowledge as explicit knowledge; while for tacit knowledge, which is argued is more important, IT is not an appropriate intermediary. For example, Pfeffer and Sutton (1999) argued that KM contributes to the knowing-doing gap, because it treats knowledge as a tangible substance such as steel. IT disregards tacit knowledge and the fact that knowledge is
often transferred by stories, gossip or observing one another work. They believe that essential knowledge for work purposes is tacit and cannot easily be described or codified, and nor can it easily be stored or transferred through formal systems.

McDermott (1999) also criticized the focus of KM on IT and information systems alone. He argued that “knowledge is different from information and sharing; it requires a different set of concepts and tools” (p. 105). This is because knowledge is a human act, the residue of thinking, created in the present moment, created at the boundaries of the past, belonging to communities, and circulated through communities in many ways. Accordingly, its leverage required a unique combination of human and information systems to improve both information and thinking. Vishik and Whinston (1999) also argued that technology is not sufficient as a knowledge intermediary and cannot substitute HIs such as librarians; they state “although technologies can make information production, distribution, and retrieval more efficient, some of the intermediation activities for knowledge products are intellectual in nature and cannot be substituted by software” (P. 161).

In the context of professional service firms (PSFs) such as law firms, Beaverstock (2004) argued that the key mechanism for knowledge reuse and sharing (transfer) is face-to-face and not KMSs or KM tools: “key mechanism for knowledge transfer within/between PSFs is through 'face-to-face' contact with work colleagues, clients, competitors and other actors in society” (p. 161).

According to Parsons (2004) there is a common misperception of KM in law firms that regards it as equal to IT and which therefore ignores the importance of non-IT KM initiatives such as meetings and networking. As Parsons says:

Many law firms like many other organizations, have been seduced by the KM=IT perspective of the software vendors, ...this technology focus blinds firms to non-technical knowledge strategy, including effective practice group meetings, communities of interest internal and external networking, physical communications (p. 18).

Moreover, Mason and Pauleen (2003) found that the main barriers to successful KM implementation are all internal and management-related. These barriers are organizational culture, leadership and management practices, and lack of awareness and vision about KM; not lack of technology. Cultural barriers, especially the human dimension are one of the major reasons for KM failure (Kaweevisultrakul and Chan, 2007). Mason and Pauleen (2003) study tested the two approaches of KM that have prevailed in the literature, and found that neither technological solutions nor management solutions are the main challenge of KM. In addition, their findings supported the model of KM as the management of people. So management of people in terms of knowledge reuse and sharing requires the HI in addition to the technical intermediary.
(2) High-value knowledge sharing and the IT intermediary

IT should be applied in KM intelligently, so the knowledge needs of staff and the organization, and types of knowledge should be matched with application of appropriate IT (O'Dell et al., 1998). The role of IT systems in knowledge sharing depends on the conditions and context of the organization or community in which those systems are applied. For example, whether the people of the community know each other or not, whether the community is small or large, whether the members have the chance to meet each other socially or not, are important in applying IT for knowledge sharing (Hislop, 2002). Now, to explore the role of IT in high-value knowledge sharing, it is required to understand the role of IT in tacit or high-value knowledge sharing in knowledge-intensive firms.

Here it is argued that for high-value knowledge sharing IT is not an appropriate intermediary for two major reasons. The first reason is that high-value knowledge is largely tacit knowledge and IT-based systems and tools are not appropriate for tacit knowledge sharing. The second reason is that if people share their knowledge they usually share high-value knowledge. On the other hand, people generally prefer to share their knowledge directly with other people without the use of IT-based systems or tools. The following paragraphs support this claim with evidence from the literature.

IT cannot be the sole intermediary for any knowledge sharing, especially in the case of tacit knowledge. For tacit knowledge sharing, there is also a need for a high level of social interaction, even though IT can be used for explicit knowledge sharing (Hislop, 2002). However, Hislop (2002) maintained that there is no completely explicit knowledge because all knowledge is partly tacit, so IT-based systems must be supported by other mechanisms.

Moreover, Hislop (2002) also states that common knowledge between parties is necessary for knowledge sharing, so although the KMS can be useful in a community that has much knowledge in common, it may not be useful in a multi-unit firm in which every unit has a different context. Furthermore, in spite of some studies that argue that technology-based knowledge sourcing media such as intranets are neither inherently superior nor inferior to traditional media (Gray and Meister 2006), the KMS may not be a rich medium of communication compared with face-to-face communication due to the lack of social cues (Symon, 2000 cited in Hislop, 2002) and the trust issue (Hislop, 2002).

Usually, therefore, a rich medium is necessary for high-value knowledge. Daft and Lengel (1989) who proposed the media richness theory stated that the content of the formal information system is moderate to low in richness; while direct contacts and group meetings often use rich media in which people exchange opinions, perceptions and judgments face-to-face. According to Daft and Lengel (1989) “face-to-face is the
richest medium because it provides immediate feedback so that interpretation can be checked, ... media of lower richness are impersonal and rely on rules, forms, procedures, or database” (p. 560). Moreover, direct contacts and group meetings allow exchanging subjective information as well as objective data. According to Sheer and Chen (2004) the richness of a medium depends on:

“(a) the availability of instant feedback; (b) the use of multiple cues, such as physical presence, voice inflection, body gestures, and graphic symbols, and so forth; (c) the use of natural language for conveying a broad set of concepts and ideas; and (d) the personal focus of the medium. The more a medium displays these attributes, the richer it is. Otherwise, it is leaner. Face to face is the "richest" medium because it has the capacity for immediate feedback, carries multiple cues, and uses natural language (p. 77).

As explained in 2.8, similarly, Murray and Peyrefitte (2007) suggested that low-media richness technology (such as databanks, e-mail, and teleconferencing) is used more for information transfer than for knowledge transfer purposes. However, it should be mentioned that due to constant improvement and changes in information technologies, KMSs are gaining some features of rich media. For example, Internet2 applications can provide enhanced interactivity and greater amounts of information via richer communication (Simon and Peppas, 2004).

Regarding knowledge sharing, from another point of view, individuals may be reluctant to contribute high-value knowledge to a virtual community (a type of public KMS). Because it is a public medium and perceived reciprocity is low, so, if people contribute great loss may occur to them. One of the factors that influence knowledge sharing is whether the knowledge sharer is using IT-based systems or not. Ye et al. (2006) found that three groups of motivators influence knowledge contribution intentions in a virtual community: egoistic motivators (knowledge self-efficacy, reputation, and reciprocity), altruistic motivators (enjoyment in helping others), and collectivistic motivators (commitment). Moreover, they found that the perceived value of knowledge has a strong moderating influence between enjoyment in helping others and reciprocity, and the knowledge contribution intention. According to Ye et al. (2006), therefore, people, differentiate between the contribution to a KMS and direct sharing. In direct sharing with a close friend or colleague, people can easily feel reciprocity and enjoyment.

People prefer to share knowledge, especially high-value knowledge, in interactions in their groups or in communities where they know and trust each other, while in sharing through the use of IT, this is usually not the case. In terms of knowledge sharing, organizational members who have common working experiences together have a greater trust in each other (Reagans et al., 2005). People are therefore much less likely to contribute to a public KMS when they do not know who is going to reuse it. Smith et al. (2005) found that the strength of the network ties has a direct
influence on knowledge creation capability. They argued that managers and knowledge workers trust people to whom they have strong ties so they are more likely to share important knowledge or information with them than contribute their knowledge to a formal KMS (Smith et al., 2005, Geisler, 2007).

Ford and Staples (2006) studied the influence of the perceived value of knowledge on individuals’ willingness to share knowledge. They evaluated and measured the perceived value of knowledge according to four dimensions: benefits, usefulness, uniqueness, and source of knowledge. Their study indicated a positive relationship between perceived value of knowledge and the intention to share. However, they also argued that the target of shared knowledge is a very important factor, because there is a difference between sharing knowledge directly and sharing knowledge to unknown others through broadcast media (such as KMSs). Individuals are generally willing to share their high- and low-value knowledge with close friends or colleagues for different reasons. However, the majority of knowledge holders are unwilling to contribute their knowledge, especially high-value knowledge, to generalized others, such as a knowledge repository, or an organizational library (Ford and Staples, 2006). They are therefore reluctant to use IT for knowledge contribution particularly for high-value knowledge.

For many reasons, KMSs or tools are generally not preferred intermediaries for knowledge sharing. One of the main purposes of KM is the promotion of knowledge sharing. Knowledge sharing itself is valuable. In the context of an organizational working environment, it is assumed that if people share knowledge, they share high-value knowledge. People mostly prefer to share their knowledge directly rather than use IT-based KMSs for several reasons. These reasons include the difficulty of codifying knowledge and preparation for contribution, difficulty of IT application, security and confidentiality, fear of criticism, and the issue of free riding, in addition to the possible lack of trust and reciprocity.

For example, Kankanhalli et al. (2005a) found a negative relationship between generalized trust, codification effort, and reciprocity, and the contribution to KMSs. Wasko and Faraj (2005) found that contributors to an electronic network of practice do not expect reciprocity. Moreover, studies have also showed that there are some barriers and challenges in using KMSs for contribution and in integrating contributions into organizational routing operations (Reagans et al., 2005). For example, Ardichvili et al. (2003) found that, in the context of a virtual knowledge sharing community of practice, the barriers to contribution to the system is people’s fear to lose face, or fear of criticism. Moreover, the findings of this study showed that lack of trust, confirmation by managers before sharing, security and confidentiality issues, and knowledge hoarding are barriers to contribution to KMSs.
So IT, including KMSs and KM tools, might not be the first intermediary choice of people for sharing or contributing any type of knowledge, and especially tacit knowledge and high-value knowledge.

(3) High-value knowledge reuse and the IT intermediary

This section discusses the second flow of knowledge in organizations, namely knowledge reuse which, in terms of explicit knowledge, includes finding and receiving knowledge from KMSs or through KM tools.

The quality of the knowledge content in the KMS, and the amount of high-value knowledge contributed to the system indicate the value of the knowledge that can be retrieved from the KMS. If there is high quality knowledge in KMSs, people can retrieve and reuse high-value knowledge. Usually, however, there are challenges associated with the quality of knowledge in a KMS. Not all high-value knowledge, especially high value tacit knowledge, can be articulated and documented for storage in KMSs.

Garud and Kumaraswamy (2005) referred to the pathologies of KMSs and argued that “an organization's knowledge system contains seeds of its own destruction” (p. 26). This comes from “vicious circles” in which applying incentives for more contribution to the KMSs leads to a situation in which knowledge in the system is greater than the system’s ability to review and revise it. Moreover, due to incentives some staff may contribute and articulate more than they actually know; or sometimes, by trying to codify and articulate tacit knowledge, they may trivialize the knowledge they contribute.

Therefore, because it is the quantity rather than the value or quality of the knowledge that is rewarded, the KMS may be overloaded with low quality knowledge. This increases the cost of searching for knowledge in the system and also increases the burden of sifting and filtering knowledge from a pile of low-value knowledge (Garud and Kumaraswamy, 2005). Moreover, this also diminishes the value of knowledge sharing and sometimes leads to reinventing the wheel (Lee, 1998). In this situation, it is more likely that staff will share and reuse or receive low-value knowledge through KMSs and find a direct way of sharing or receiving high-value knowledge without the intermediation of KMSs.

Furthermore, O'Dell et al. (1998) focuses on the inappropriateness of IT for high-value knowledge according to three general rules-of-thumb: The first is that, “the more valuable the knowledge, the less sophisticated the technology that supports it, ...The higher the grade of knowledge, the lower tech the solution” (p. 88). For example, database and data mining tools are sophisticated high level technologies but arguably contain low-value knowledge if they contain any knowledge at all; in contrast, the help desk which is low level technology and comprises just human and
telephone offers high-value knowledge. Thom (2001) explains the difference in terms of a comparison of pages of tabular data and statistical analysis on the one hand, with advice from an expert offering integrated high-value knowledge based on a combination of that information, personal experience, skills and context, on the other.

The second rule-of-thumb is that "tacit knowledge is best shared through people; explicit knowledge can be shared through machines; or, the more tacit the knowledge, the less high-tech the solution" (p. 88). In other words, if the knowledge is explicit IT is more likely to be an appropriate intermediary; if the knowledge is tacit the helpdesk or people are more likely to be more appropriate intermediaries. Third, spending more than one-third of energy and resources on IT in KM, is more likely to lead to failure in KM.

In conclusion, the technical intermediary is not appropriate for tacit knowledge which is relatively valuable and important. Moreover, it is not appropriate for sharing knowledge either generally or specifically high-value knowledge. For explicit knowledge or information which has less or low value, however, the technical intermediary, is an appropriate intermediary, especially in the knowledge finding and receiving flow as opposed to knowledge sharing flow. However, the better management of KMSs by HIs or appropriate matches of technical intermediaries with HIs can improve the position of the technical intermediary in high-value knowledge, as suggested in the next section.

2.10. Conceptual Framework

This section provides the initial research framework based on analysis and synthesis of knowledge reuse and intermediary literature. First, a taxonomy of HIs is proposed. Then the HIs functions required for successful knowledge reuse and sharing are identified. After that, an appropriate intermediary for high-value knowledge is identified. These three sections provide an initial answer to the three research questions as well. In the last section the proposed initial framework is presented.

The core concept of a knowledge intermediary is a broker or a body (human or technology) which facilitates tacit or explicit knowledge reuse and sharing between two or more parties (knowledge holder/ source, and knowledge seeker/ user) either directly or indirectly; without this intermediary, such a relationship and/or exchange would be difficult or even impossible. For example, intermediaries intermediate knowledge reuse or explicit knowledge flow, by facilitating contributing to KMSs, performing knowledge work on KMSs, such as packaging, categorizing, and distributing or providing access to users. In the case of tacit knowledge the intermediary also facilitates knowledge sharing through socialization and externalization processes.
Clearly, there are two main types of knowledge intermediary, namely human and technological as Markus (2001) claimed, but more detail on the types or nature of HIs and their functions is proposed below.

2.10.1. Proposed taxonomy of human intermediaries

In terms of the human intermediary, analysis of the literature reveals two types of HI or two types of HI role in facilitating knowledge reuse and sharing. Some intermediary roles are relevant to IT and some are not. In facilitating knowledge reuse and sharing, due to the critical role of the technical intermediary, a type of HI is necessary to enable IT for this purpose. This type of HI is referred to as a “technically-oriented HI”. But another HI type should perform the important non-IT relevant facilitation of knowledge reuse and sharing. This type of HI is referred to as a “Knowledge-oriented HI” (Behboudi and Hart, 2006).

Due to the different nature of these two types, this differentiation contributes to a better understanding of knowledge reuse and sharing facilitation. Moreover, differentiating these two types draws attention to the importance of both and prevents neglect of either one. Each of these types of HI requires different skills and characteristics. For example, to be a good technically-oriented HI or to perform better technology-oriented HI roles good IT knowledge is essential, whereas KM or communication qualifications are essential for a good knowledge-oriented HI.

The knowledge-oriented HI supports knowledge reuse and sharing and facilitates knowledge gathering/creation, storage/retrieval, transfer and usage as well as acquiring and codifying knowledge. The knowledge-oriented HI can be a professional in the field of organizational knowledge who may be known as the chief knowledge officer, a knowledge manager, a knowledge champion, a librarian or some other name. Regardless of name, this professional performs important roles in facilitating the knowledge reuse and sharing across the organization. A knowledge-oriented HI could also be a team of experts who may be positioned in a KM department and may have IT ability as well as other relevant skills.

In contrast, the technology-oriented HI is a human or group that provides technological support for knowledge users and contributors and others who work with KMSs or KM tools. Such support might entail designing appropriate KMSs, running the KMSs and KM tools and training users to better apply KMS technologies and many other functions.

Knowledge-oriented and technology-oriented HIs should, of course, work closely with each other, and it is possible for one person to fill both types of intermediary role. Because the basis for this typology is the differences in types of roles that HIs play, it can be regarded not only as two types of HI but also as two types of HI roles.
2.10.2. Proposed functions of intermediaries

It is important not only to identify different types of HI, but also to understand how their different functions improve knowledge reuse and sharing. This is the purpose of the second research question.

The literature review revealed numerous roles and functions performed by intermediaries in general and in KM, and the knowledge reuse process in particular. About 40 studies which specify different roles or functions for intermediaries or brokers form the basis of a list of functions for knowledge intermediaries. These functions have been summarized, analyzed, and categorized into different groups (see two Tables in Appendix A). The 29 functions which appear in Table 2.11 were derived from those groups. Based on our understanding of knowledge reuse and sharing processes, as well as the facilitation and intermediation requirements, this research argues that these functions need to be carried out by knowledge intermediaries for successful knowledge reuse and sharing.

These functions are also related to the relatively different stages or processes of facilitation in knowledge reuse and sharing which are specified in four areas, comprising knowledge sourcing, KMSs and KM tools (and intermediary administration), knowledge use, and knowledge sharing (first column in Table 2.11). Moreover, these functions relate to the five process areas identified in the initial framework (Figure 2.9). Also the functions that are, or can be best, supported or performed by the different kinds of intermediaries are identified (last column in the Table 2.11).

<table>
<thead>
<tr>
<th>Stages or Knowledge Sourcing</th>
<th>Functions of Intermediaries</th>
<th>P.A</th>
<th>Intermediary type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Sourcing</td>
<td>Recognizing organizational (users) knowledge needs</td>
<td>1</td>
<td>KHI **</td>
</tr>
<tr>
<td></td>
<td>Identifying, acquiring, gathering and screening knowledge from external and internal sources</td>
<td>1</td>
<td>KHI, IT &amp; THI</td>
</tr>
<tr>
<td></td>
<td>Extracting all learning, generic themes of achievement and best practices, and authoring them if necessary</td>
<td>1</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Facilitating knowledge creation</td>
<td>1, 4</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Transferring all knowledge to appropriate KMSs</td>
<td>1</td>
<td>IT &amp; THI</td>
</tr>
<tr>
<td></td>
<td>Monitoring and controlling the input to the repository (providing input procedures and criteria)</td>
<td>5</td>
<td>KHI</td>
</tr>
<tr>
<td>Stages or processes</td>
<td>Functions of Intermediaries</td>
<td>P.A</td>
<td>Intermediary type</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-------------------</td>
</tr>
<tr>
<td>KMSs and KM tools</td>
<td>Designing and implementing appropriate KMSs to present and publicize knowledge for the next usage</td>
<td>2</td>
<td>IT, THI &amp; KHI</td>
</tr>
<tr>
<td></td>
<td>Developing user-friendly KMSs in which members store their learning, making this learning available for other members</td>
<td>2</td>
<td>IT, THI &amp; KHI</td>
</tr>
<tr>
<td></td>
<td>Codifying knowledge to be ready for reuse and institutionalising it</td>
<td>5, 2</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Adding metadata and context for knowledge and processing and improving knowledge value</td>
<td>5</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Indexing, classifying, abstracting sanitizing, filtering, structuring and packaging of knowledge</td>
<td>5</td>
<td>IT, THI &amp; KHI</td>
</tr>
<tr>
<td></td>
<td>Keeping the content of KMSs current and up-to-date</td>
<td>5</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Improving the searching and retrieving of knowledge from KMS</td>
<td>3</td>
<td>IT &amp; THI</td>
</tr>
<tr>
<td></td>
<td>Establishing procedures and processes for using the knowledge of KMS</td>
<td>3</td>
<td>KHI &amp; THI</td>
</tr>
<tr>
<td></td>
<td>Providing qualification, and reliability of knowledge</td>
<td>5</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Maintaining the repositories sustainable and active</td>
<td>5</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Developing a knowledge map</td>
<td>5</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Suggesting required positions and policies for KM facilitation activists and coordinating their activities</td>
<td>1, 4</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Administering firm’s databases and facilitating knowledge flow and controlling access to knowledge</td>
<td>1, 2, 3</td>
<td>THI, IT &amp; KHI</td>
</tr>
<tr>
<td></td>
<td>Providing access and disseminating knowledge for reuse through appropriate channels and providing research for user</td>
<td>3</td>
<td>IT, THI &amp; KHI</td>
</tr>
<tr>
<td></td>
<td>Coaching and helping users to locate, analyze, process, and apply the knowledge and the KMS technology</td>
<td>3</td>
<td>KHI, IT &amp; THI</td>
</tr>
<tr>
<td></td>
<td>Suggesting ways to manage the type and the volume of knowledge</td>
<td>3</td>
<td>THI &amp; KHI</td>
</tr>
<tr>
<td></td>
<td>Serving and training the users to enhance the application of the KMS</td>
<td>3</td>
<td>THI</td>
</tr>
<tr>
<td></td>
<td>Lessening the mystique of the KMS technology</td>
<td>3</td>
<td>THI</td>
</tr>
<tr>
<td></td>
<td>Reducing the time and effort users spend on knowledge acquisition and processing</td>
<td>5, 3</td>
<td>IT &amp; THI</td>
</tr>
<tr>
<td>Knowledge Use</td>
<td>Encouraging a knowledge sharing culture and effective use of organizational memory</td>
<td>4, 1</td>
<td>KHI</td>
</tr>
<tr>
<td></td>
<td>Facilitating knowledge sharing and collaboration by creating communications and KM tools</td>
<td>4, 1</td>
<td>KHI, THI &amp; IT</td>
</tr>
<tr>
<td></td>
<td>Facilitating knowledge sharing by creating and supporting dynamic knowledge networks</td>
<td>4</td>
<td>KHI, IT &amp; THI</td>
</tr>
<tr>
<td></td>
<td>Exploring and observing the firm as source of who knows what and connecting knowledge seekers to knowledge holders</td>
<td>4</td>
<td>KHI</td>
</tr>
</tbody>
</table>

*PA= process areas  ** KHI= knowledge-oriented HI, THI= technology-oriented HI
2.10.3. Appropriate intermediary for high-value knowledge

Based on this literature review, this study proposes that the technical intermediary and technology-oriented HIs are not appropriate intermediaries for high value and tacit knowledge reuse and sharing. However, for less or low-value knowledge, which is largely explicit knowledge, or information, IT and, consequently, technology-oriented HIs are appropriate intermediaries. To facilitate tacit knowledge, which is argued to generally be high value, knowledge-oriented HI is appropriate because they can facilitate tacit knowledge reuse and sharing through providing settings for social interaction. They can and should perform many functions in this respect such as providing the situation and working environment and culture for socialization and externalization (process area 4 in the framework). Moreover, another reason that makes knowledge-oriented HIs appropriate intermediaries for high-value knowledge is their ability to perform knowledge work on KMSs, adding value to the knowledge by, for example, adding metadata and quality control (process area 5 in the framework). These two areas are shown in the shaded oval in the framework. It should be noted again that, due to the difficulty of assigning value in the abstract to a piece of knowledge, for the practical purposes of this study the perceived value of the knowledge will be considered.

2.10.4. Conceptual framework

Figure 2.9 depicts the initial conceptual framework of intermediaries in knowledge reuse and sharing. It also indicates which intermediary is appropriate for high-value knowledge (process 4 and 5). For successful knowledge reuse and sharing, two types of HI: the knowledge-oriented HI and the technology-oriented HI as well as IT are needed to facilitate the processes. Facilitating knowledge reuse and sharing includes intermediating in explicit and tacit knowledge reuse and sharing flows from internal and external sources to knowledge users. The Figure shows the two flows of knowledge: explicit (A) and tacit (B).

The flow B is largely a tacit knowledge flow which includes facilitation or intermediation in the direct interaction of knowledge holders and users for knowledge exchange; or in other words, facilitation of direct, and mostly tacit, knowledge sharing without any major reliance on an IT intermediary.

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Technically-oriented HI

External sources of knowledge

Internal sources of Knowledge
(Knowledge producers or holders)

Knowledge-oriented HI

Technically Intermediary
(KMSs and KM tools)

Knowledge Users

1 = knowledge sourcing such as collecting knowledge (is performed by both HIIs)
2 = providing and running KMSs and KM tools (is performed by technology-oriented HI)
3 = distributing and providing knowledge for users and training them (is performed by both HIIs)
4 = facilitating tacit and direct knowledge exchange, such as socialization
5 = conducting knowledge work on KMSs, such as adding metadata and quality control

Process areas in shaded oval (4, 5) are high-value knowledge reuse and sharing facilitations areas which can be facilitated best by knowledge-oriented HI.

Figure 2.9. Initial conceptual framework of intermediaries in knowledge reuse and sharing generally, and specifically for high-value knowledge

All knowledge intermediaries, including IT and the two types of HI are important, and can, and should, play different roles for better facilitation of knowledge reuse and sharing. But not all are appropriate for all types of knowledge flow or all types of intermediation function. The model shows that in five process areas there is a need for HI facilitation: in areas 1, 2, and 3, explicit knowledge is facilitated, which includes activities such as extracting and collecting knowledge from knowledge sources or knowledge holders (knowledge contribution), storing and packaging in KMSs, running KMSs and distributing knowledge to the users. Areas 1 and 3 need both types of HI and area 2 should be facilitated by technically-oriented HI. Furthermore, the technical intermediary plays a major role in the explicit knowledge
flow because its strength is in handling codified knowledge by, for example, providing the means for capturing, storing, sorting and distributing knowledge or searching for knowledge.

Process area 4 is the tacit and direct knowledge flow which includes facilitation in the interaction of knowledge workers for knowledge exchange. Area 5 indicates non-technical work on KMSs, such as adding metadata and quality control, and improving knowledge presentation. Functions of areas 4 and 5 intermediate in high-value knowledge reuse and sharing and can be done best by a knowledge-oriented HI. The shaded oval shows these areas in the model.

2.11. Summary

This chapter has reviewed the relevant literature, focusing on knowledge, knowledge reuse, and knowledge intermediaries to clarify the research problem and situate it in its surrounding literature. Moreover, the review enabled the researcher to propose the initial conceptual framework.

The chapter first investigated the literature on the concept of knowledge and found that the value added hierarchy of data, information, and knowledge is commonly accepted in the literature. Due to the knowledge-intensive type of the case of study, the Connectionist epistemology of knowledge and Payload knowledge as the definition of knowledge have been chosen for the study. The concepts of high- and low-value knowledge were also explored in the literature mostly in relation to tacit and explicit knowledge. It is argued that, in contrast to explicit knowledge, tacit knowledge can generally be regarded as high-value knowledge.

Then the review of the literature turned into the background to the research. To address the problem of the knowing-doing gap problem, improving knowledge reuse and sharing was selected as the focus of the study. Of the many factors which have an impact on successful knowledge reuse, it was argued that intermediaries are the more (or the most) important factor.

Also, the Markus (2001) theory of knowledge reusability regarded intermediaries as solution for knowledge reuse but without elaborating on the concept and the roles and functions of intermediaries. In the main, the literature review indicated that, in spite of the importance of the knowledge intermediary, the concept is not well known or defined in the literature or even in practice.

Due to the lack of knowledge intermediary theories, a broad literature review of intermediary in KM and other related areas has been conducted. It is found that the intermediaries play important and various roles in facilitating many initiatives within and between organizations. The review has also focused on the relative suitability of human and technical intermediaries in high- and low-value knowledge reuse.
Finally, this chapter developed an initial framework of intermediaries in knowledge reuse and sharing through analysis and synthesis the literature. It identified two types of HI, namely the knowledge-oriented HI and the technically-oriented HI and a list of 29 functions for HIs. The chapter concluded that for high-value knowledge, the knowledge-oriented HI type is a more appropriate intermediary than IT and the technology-oriented HI.
RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes and justifies the research methodology and methods that are applied in this study. It explains the qualitative research methodology and the strategy of a case study to answer the research questions.

The chapter is organized in the following order. Section 3.2 discusses different research design options and the process of selecting appropriate methodologies. In this section the underlying research philosophy, the approach, and the strategy for this study are discussed. The study adopted a qualitative approach and the qualitative methodology is elaborated further in this section. Section 3.3 describes the strategy adopted, namely use of a case study as well as related issues. Moreover, it justifies the single case study approach. Section 3.4 revisits the research questions and describes the objectives of the empirical research.

Section 3.5 describes the case study preparation activities, which include two pilot studies with different objectives. In section 3.6, the two phases of data collection are explained briefly. The data collection methods, which include document and artifact review as well as interviews, are described in section 3.7. Because interview was the main method of data collection, it is described in detail in section 3.8. In this section the criteria for selecting the case and the subjects are explained, as well as the interview questions and other interview considerations.

Section 3.9 describes the strategies, processes, and techniques used in the data analysis. Section 3.10 evaluates the current case study’s validity and reliability. This is followed by the ethical considerations of the study in section 3.11, and a summary of the chapter in section 3.12.
3.2. Research Methodology (Design Option)

Before selecting a research methodology and the data collection methods, it is important to consider several issues regarding the research processes. Saunders et al. (2003) illustrate the layers of the research processes from the ‘research philosophy’ to the ‘data collection method’ in their research process onion (Figure 3.1).

In the main, this study adopts the interpretivist philosophy. In contrast to positivism, interpretivism views the social world as a very complex one, in which generalization is not generally meaningful because the business environment is complex, unique and constantly changing (Saunders et al., 2003).

Although a few theories are considered, the role of existing theory was not dominant in the research design. Due to the nature of and demands made by the research questions and objectives, the case study strategy has been used in this study. This will be elaborated in the next section. In terms of the time horizon, the research was conducted over a period of four and a half years and the data were collected over
approximately one and a half years. A range of data collection methods has been used in this study.

From one point of view, research can be classified into two major categories: qualitative research and quantitative research. Given the range, sophistication, subtlety and complexity of the roles and functions of knowledge intermediaries, as well as the relative lack of research that specifically targets them, their identification, typologies and their functions, a qualitative research technique is adopted for this study.

Because of the relative lack of research on the topic of this study as explained in chapter one, this research is basically an exploratory study. Indeed, it is a particular strength of qualitative research that it can be used to explore, which is consistent with the inductive approach adopted as the primary approach for this research. In addition, to address the research issues and answer the research questions adequately, it is necessary to understand the attitudes and perceptions of knowledge users and intermediaries about knowledge reuse and sharing and intermediaries besides understanding the KMSs and knowledge reuse process in an organization. In this regard, qualitative research explores attitudes, behaviors and experiences through methods such as interviews. It allows an understanding of the dynamics present and complexities within a single field setting (Dawson, 2002). A qualitative approach is, therefore, likely to be superior because of the richness of the data it typically reveals.

This study is largely qualitative and relies on a qualitative approach and qualitative data. However, a brief questionnaire (scale) was used during the interviews to measure the experts’ high- and low-value knowledge acquisition or knowledge getting (finding/receiving) from different sources and sharing to different targets. So, quantitative evidence in the form of charts was also used. The study, therefore, might be regarded as an integration of qualitative and quantitative research, in which the qualitative research is emphasized over the quantitative research (Flick, 2002). The quantitative data were collected and used for the third research question.

There are several ways to link qualitative and quantitative research. Miles and Huberman (1994) propose four research designs for the integration of qualitative and quantitative research in terms of sequence. The current study used a modified version of the third design. First, qualitative data were collected to explore and better understand the issue and its context. In the second phase, both quantitative and qualitative data were collected simultaneously, similarly to the first design, which will be described later.

There are three main purposes for studies: exploratory, descriptive, and explanatory. A study may have multiple purposes (Neuman, 1997). The purpose of this study is mainly both exploratory and descriptive which, according to Neuman (1997), have many similarities. Descriptive studies “describe social phenomena and contribute to
understanding about them” (Rossman and Rallis, 2003, p. 16), as in this study which identifies and describes the intermediaries, their roles and functions.

Therefore, case study can be both qualitative and quantitative, and be exploratory, descriptive, and explanatory in nature.

### 3.3. Case Study Strategy

Case study is an important research strategy within the Information Systems (IS) discipline. Myers (1997) states that the most common qualitative method used in IS is case study. Rossman and Rallis (2003) state that most case studies are exploratory and descriptive as, indeed, this study is.

Yin (2003), defines case study as an empirical inquiry to “investigate a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 13). This study investigates knowledge reuse and sharing facilitation by intermediaries in a real organizational setting.

Yin (2003) adds that case study inquiry aligns with circumstances in which many variables are investigated and it uses several sources of evidence. In this study, several variables are examined, including knowledge reuse, knowledge sharing, the human intermediary, the technical intermediary, intermediation and facilitation processes, roles of intermediaries, high-value knowledge, and low-value knowledge. Moreover, because of the many variables, this study also uses several sources of evidence.

Case study takes advantage of previous studies to develop propositions to aid data collection (Yin, 2003). In this study, we have reviewed the literature on knowledge reuse and the intermediary as well as high- and low-value knowledge and developed the initial framework to aid the data collection.

Case study has considerable advantages and strengths. It is detailed, and complex, and uses multiple sources to gain different perspectives (Rossman and Rallis, 2003). Similarly, Yin (2003) maintains that one of the strengths of case study is the ability to take advantage of different tools of data collection and evidence such as documents, artifacts, interviews, and observations. It enables a more in-depth examination of a particular situation, and the information that it offers can be rich and enlightening (Yin, 2003). An important strength of case study is that it is likely to generate the best theory (Neuman, 1997). This research aims to extend a theory or possibly generate new theory. All these strong points are, therefore, relevant to this study.

Moreover, case study is appropriate, because issues about KM, knowledge reuse, and KMSs are inherently context specific. According to Yin (2003, p. 4) “the case study
is the method of choice when the phenomenon under study is not readily distinguishable from its context”. Rossman and Rallis (2003) also believe that case study is context-dependent.

Besides, due to the type of research questions, case study is the appropriate strategy for this study. According to Saunders et al. (2003, p. 93), the “case study strategy has considerable ability to generate answers to the question ‘why’ as well as the ‘what’ and ‘how’ question”. Similarly, according to Yin (2003), case study is appropriate when research question focus on “how” and “why”, and “what” in special conditions; and he argues that “what” (who as well) questions that have an exploratory nature can be answered by applying all five research strategies, including case study. Yin (2003) also believes that some types of “what” questions are exploratory when the goal is to develop pertinent hypotheses and propositions for further inquiry.

The current study is exploratory research that deals with “who or what” questions. At the same time it is also descriptive research that focuses on “how” and “what” (and “who”) questions. These two kinds of research have many similarities. One goal of the descriptive research is creating a set of categories or a classification of types (Neuman, 1997) and, in this study, one aim is to appropriately classify intermediaries. Indeed, another one of the purposes of a case study is to describe a phenomenon (Brewerton and Millward, 2001).

Due to the relative lack of previous study on the research issue of interest in this thesis, qualitative research involving use of a case study is regarded as the appropriate methodology (Yin, 2003). So as Saunders et al. (2003) maintain, when a research topic is new and where there is little existing literature, it is more appropriate to generate data and discover the theoretical themes suggested by data.

3.3.1. Critics of case study

There is some criticism of case study, including lack of rigor and the problem of generalizability. However, Yin (2003) argues that even other strategies may have problems with rigor if they do not follow specific procedures. Yin (2003) also maintains that concern about generalizability is not restricted to case study. There is also concern about generalizability with other strategies.

Generalizability is different in case studies in comparison with other strategies. Case study “is generalizable to theoretical propositions and not to population” (Yin, 2003, p 10). Moreover, due to the context-dependence of case study, it is not generalizable in a probabilistic sense. However, based on the logic of ‘reasoning by analogy’, the lessons learned can be applied in other sufficiently similar cases (Rossman and Rallis, 2003). The generalizability issue, in regard to this research, will be discussed more later in this chapter. The final criticism is the long duration of the research and the resulting “massive, unreadable documents” (p. 11). Nevertheless, Yin (2003)
believes that is not the case if the case study is well-conducted based on appropriate plans and procedures.

3.3.2. Single case study and case study types

This study has implemented a single case study strategy. According to Yin (2003) a single case study can be used based on the following rationale: when it represents a **critical** case in testing a well-formulated theory; when the case represents an **extreme or unique** case; when the case is a **representative or typical** case; when the case is a **revelatory** case; or when the case is a **longitudinal** case. In addition, a single case study is appropriate when the research is exploratory.

This study according to the following rationale, discussed in Yin (2003) is a single case study: the firm that is selected as a case represents an important case to develop a theory because it is a knowledge-intensive large organization in which the facilitation of knowledge reuse and sharing and intermediation are both important. It allows investigating theory, in addition to providing rich data for alternative explanation. Moreover, as it is described in chapter four, the case is a typical case of a knowledge-intensive large multi-unit law firm. In addition, the exploratory nature, and context-specific issue of this study justify the application of a single case study.

As mentioned previously, in IS research case study is common. Indeed, Markus (1983) conducted an exemplary case study based on a single case study. Lee (1989) analyzed this case study and regards it as a scientific case study, since it involves an “entire configuration of individuals, groups, social structure, hardware and software in the setting of an organization” (pp. 36-37), (Golden Triangle Corporation) through interviews and documents.

Single case study is divided into two types: holistic and embedded (Yin, 2003). The basic design for the current case study is type two, in which a single case study is designed with embedded multiple units of analysis: it investigates several units in the single case. Joint initiatives (the human and technical intermediary, and knowledge reuse and sharing processes) are the units of analysis. These units involve different human and technical intermediaries, knowledge reuse and sharing processes, high- and low-value knowledge flows, and the roles or functions of human and technical intermediaries.

Researchers must be careful when applying single embedded case study as is done here. As Yin (2003) notes, it has drawbacks such as focusing on subunits and ignoring the whole or larger case.

Having described the philosophy behind this research and the approach adapted for this study, the next section revisits the study questions and objectives for practical study and then describes the actual process involved in conducting the study.
3.4. Objectives of the Empirical Study

The aim of the research is to investigate and understand the knowledge intermediaries and their types and roles for effective knowledge reuse and sharing, as well as their impact on high- and low-value knowledge flows. The research aims to:

- Verify that knowledge intermediaries can be sensibly categorized into the categories that have been identified in the initial conceptual framework;
- Investigate whether there are other types or categorization for knowledge intermediaries;
- Investigate, identify, and understand the important and necessary roles and functions that the different types of intermediaries can and should perform in order to achieve successful (effective) knowledge reuse and sharing;
- Establish the type of intermediary that is best suited to fulfill each kind of role listed; and
- Identify the type of intermediary that better facilitate high- and low-value knowledge reuse and sharing.

3.5. Case Study Preparation

A pilot case study can be conducted as a formal part of case study preparation (Yin, 2003). In this study, two pilot studies were conducted prior to the main data collection. The first study aimed to refine the research topic and the second aimed to refine the case study protocol.

3.5.1. Primary pilot study about knowing-doing gap

In the first year of this study a primary pilot study was conducted to gain a better understanding of the problem of knowledge reuse or the knowing-doing gap in organizations. This study used two methods: survey and interviews.

For the survey, an explanatory questionnaire was designed and distributed at the ACT Knowledge Management (ACTKM) Conference held on 27 - 28 November 2005 in Canberra. The majority of the respondents to this questionnaire were either in charge of KM in their organizations or were KM practitioners. The participants came from a range of different organizations from around Australia. Approximately 70 questionnaires were distributed, from which 20 usable questionnaires were returned and analyzed. Moreover, three interviews with senior practitioners (a manager and two users) in two organizations (two from the insurance industry and one from the energy industry) were conducted in 2006.

The pilot study aimed to discover whether the knowing-doing gap and the knowledge reuse problems are significant in organizations, and to collect general and background information on addressing this problem. The result indicated that “the
knowing-doing gap”, is a concern for organizations and that research on improving knowledge reuse is worthwhile. Based on the results of these pilot studies and further review of the literature, the researcher decided to narrow the research topic and revise the research proposal to focus specifically on knowledge reuse and intermediaries. Moreover, this pilot study also improved the research skills and learning of the researcher.

3.5.2. Second pilot study

Another pilot study was conducted in the Australian National University library, prior to the final data collection, in order to refine the case study protocol, particularly the interview guide (interview questions). This was important because the researcher had access to a limited resource in the main case, so the case study protocol had to be revised and tested before its application in the main case to maximize the benefits. Five formal interviews and one informal interview were conducted in the library and one in the HR department of the university. This particular case was selected because librarians are important knowledge intermediaries. Moreover, knowledge reuse and sharing, and the application of KMSs such as an Intranet are an integral part of staff daily activities, as in the main case. Another reason for selection of this case was the accessibility of the informants.

For a researcher, pilot study can be like a laboratory site, it provides opportunities to observe phenomena from different viewpoints and apply different approaches on a trial basis (Yin, 2003). Yin (2003) maintains that pilot studies help to refine the content and procedures of the data collection plan. He differentiates a pilot test from a pre-test suggesting: “the pilot case is more formative, assisting you to develop relevant lines of the questions – possibly even providing some conceptual clarification for the research design as well” (p. 79).

In the current study, the pilot test performed these roles. Moreover, in this case, the pilot study helped to test and revise the interview questions. The pilot interview which is recommended by researchers (Brewerton and Millward, 2001) is valuable aspect of a pilot study that allows the researcher to understand issues that may arise in the main interviews such as the length of time needed, the possibility to cover the research topics, the understandability of the questions, and the understanding of difficult subjects. The pilot study was really useful in these respects.

The report from the pilot case explicitly emphasizes the lessons learned in regard to both field procedures and research design (Yin, 2003). In this study, the pilot case contributed to better conduct of the main case study, in terms of improving the case study protocol and the researcher’s skills, which in turn increased the reliability of case study research.
3.6. Data Collection Phases

To examine knowledge reuse and intermediaries in the target firm (a law firm), a study with two phases of data collection and analysis was designed. Because of the exploratory nature of the study, and in order for the researcher to become familiar himself with the issue and the field site, some interviews and documents, as well as further general and contextual data were collected before the main data collection.

3.6.1. First phase

During the first stage, which was exploratory in nature, contextual and wider data were collected on knowledge reuse and sharing as well as the roles and types of intermediaries. At this stage, the nature of the inquiry as suggested by Yin (2003) was broad. It investigated the problem's background and context, and oriented the researcher more to the case. During this stage, organizational documents were collected, KMSs were reviewed and eight exploratory and semi-structured interviews with different people, including lawyers and people from KM and IT departments, were conducted to:

- refine the research questions within the context of the research site;
- identify and examine the relevant KMSs and KM tools;
- become familiar with the case and the terminology of the staff;
- understand the structure of HIs (KM team and other possible HIs) and their roles
- understand the knowledge reuse and sharing facilitation needs and processes
- identify possible sources of staff knowledge, and possible knowledge sharing targets, and different possible intermediaries;
- identify the appropriate subjects for the main data collection; and
- refine the interview questions and design the main interview protocol to focus on the main issue

3.6.2. Second phase

The second and main data collection phase started after analyzing the result of the first data collection and refining the research questions. It was conducted a few months after the first stage. During this stage, the interview time focused on the main issues, namely, the research questions. Most of the data sources were interviews with critical subjects in the firm. The quantitative data were also collected during this stage.
3.7. Data Collection Methods

Several sources or methods are available for collecting case study data. Each has advantages and disadvantages, but they are complementary, and Yin (2003) recommends using as many methods as possible. In this study, a combined data collection method was used. However, the interview is used as the main source of evidence. In this section, the other sources used comprising documentation, physical artifacts, and archival records, are reviewed briefly.

Documentation: Documentation is relevant to almost every case study and has some advantages, such as stability, unobtrusiveness, exactness and broad coverage (Yin, 2003). In this study, the documents that were mostly collected at the beginning of the first data collection stage helped the researcher gain a better understanding of the background and the context of the firm’s practice as well as its KM and KMSs. The documents revealed the structure and roles of the KM department, as well as the firm’s structures, which was useful in selecting the sample of interviewees. Moreover, the researcher also acquired an understanding of the implemented KMSs and KM tools and their applications in the firm through these documents. In addition, acquaintance with them better equipped the researcher for interviews. They contributed to an understanding of the firm’s business and the staff terminologies for use in the interviews. Finally, reviewing documents also raised some questions that could be clarified in the interviews or by reference to the appropriate authorities. These documents included:

- History of KM projects and KMSs and KM tools and implementation in the firm;
- Firm’s KM vision and strategy;
- Training materials for users, such as presentations about KM, KM orientation, training handouts, KMSs manuals, search engine facilities;
- Documents about the methods and procedures for contribution to KMSs, and protocol for precedent development and release;
- The KM department’s structure and the roles and status of different people (KM facilitators), and job descriptions of some; and
- Firm’s public catalogues and websites, which include much general information such as the firm’s areas of business and the units.

Physical artifact or KMSs: According to Yin (2003) reviewing the physical artifact – a technological device - is insightful into technical operations. Because this study involves KMSs and tools, and most interviewees discuss issues related to KMSs, acquaintance with them was helpful. The organizational KMSs including Intranets, and KM databases, as well as search facilities were navigated and reviewed in the field. Also, during the interview, some participants showed the researcher the application of the KMSs.
Archival records: Archival records, such as service records, can be used in conjunction with other sources (Yin, 2003). Due to the importance of the application of different KMSs by users, as far as possible, graphs of the usage of the KMSs were obtained and reviewed. These indicated the application of the KMSs during a given period of time.

3.8. In-depth Interview - Primary Data Collection Method

Interviews were chosen as the main data source because they allow a detailed understanding of individuals' opinions, and the reasons for their actions. In addition interviews help to generate rich and descriptive data to understand the context in which those opinions and actions are embedded. Twenty three semi-structured interviews were conducted. Each interview took, on average, one hour. In fact interviews ranged from 40 minutes to two hours.

According to Yin (2003) there are three types of interviews: interviews of an open-ended nature, focus interviews, and formal surveys. In this study, the first data collection stage comprised open-ended interviews, and the second stage comprised mainly focus interviews. Also, a brief survey was used in the second stage. This will be described later.

Saunders et al. (2003) divided interviews into three major categories: structured, semi-structured, and unstructured. This study used both in-depth and semi-structured interviews. Some changes occurred in interview questions, especially after the first series of interviews. In-depth and semi-structured interviews are used to find answers to 'what-who', 'how' and 'why' questions in a qualitative study; and they are suitable for exploratory studies (Saunders et al., 2003).

The interview is an important method of data collection. Brewerton and Millward (2001) highlight the advantages of interviewing include rich data and flexibility. In contrast, the interview also has some disadvantages, such as the cost, the time-consumption, accessibility, and openness to bias. However, Beaverstock (2004) who conducted a semi-structured interview in his study on KM in Law firms, confirms that the interview is the appropriate and trusted way of analyzing a firm and looking for information from elite-level respondents because it allows one to probe in depth in the subject, and questions the respondents' key themes in a flexible way.

3.8.1. Interview considerations

There are some guidelines or recommendations for proper interviewing (Brewerton and Millward (2001) which were considered in this study. For example, one of the guidelines is preparing for the interview by means of a pilot interview in advance. Pilot interviews in this study were more valuable because of limited access to the informants (lawyers).
As discussed above, a pilot case study was conducted at the ANU. It helped to improve the case study protocol. In spite of the differences between this case and a law firm, the pilot case study helped in the refinement and improvement of both the content and the structure of the interview questions. Moreover, the pilot study also led to improvement in the author’s interviewing and analysing skills.

For example, participants appeared to be more willing to talk about the sources of knowledge and behavior in relation to knowledge reuse (finding and receiving) than about sharing knowledge. Therefore, the main interview questions focused first on knowledge reuse and then sharing. High- and low-value knowledge appeared to be a sensitive area but most participants differentiated between these concepts. It was also apparent that some interviewees were confused about the two knowledge flows, the flow from them or their organization to clients, and the flow within the organization (sharing and reuse) which was the focus of the study. Lessons learned from this experience were applied in the main interviews.

**Interview quality:** Interview quality involves issues such as reliability (Saunders et al., 2003). The reliability issue may arise because of the lack of standardization in data collection methods, including interviews. In addition to the improvement of case study protocol through the pilot case study, the list of interviews questions were discussed with four of the researcher’s colleagues and the supervisory panel. Furthermore, bias in relation to the interviewer, the response, and the interviewee were managed and avoided as much as possible during both the sample selection and the interviews.

Due to social and subjective nature of interview, it is open to some biases. However I tried to avoid any pre-assumptions about the subjects being interviewed. By conducting pilot interviews in the earlier stage of study in other organizations and also in the library, I improved my interviewing skills and learnt to be objective as much as possible. I avoided asking any leading questions during the interviews. Moreover, I tried to establish proper relations with the interviewees, and conducted the interviews in appropriate and normal physical and social setting. Also, to ensure high quality, all interviews (except for four by request of the interviewees) were recorded with digital recorders. There were not any systematic errors in recording the answers of respondents.

**Transcription:** The researcher himself transcribed the interviews immediately after their conclusion, to prevent any misunderstanding or false transcriptions. In addition, the potential causes and types of threat that arise in transcription were considered as well as ways of avoiding them, described by Poland (1995), in order to increase the quality of transcription as a feature of rigor in qualitative research. As far as practicable, the context of the interviews and the expressions of the interviewees were reflected in the transcription. Moreover, the time of the recorded voice file was typed in the transcription every few minutes to facilitate effective replay of the tape if
needed. Also, special transcription software called Express Scribe, which has foot-pedal control, was used for convenient transcription. To protect the confidentiality of the interviewees, identifying details were either eliminated or appropriately amended.

To support the arguments, quotes from the interviews appear in many parts of the case study report (result chapters). The aim was to have the participants speak in their own words. The reference codes of the quotes were removed to prevent identification of the interviewees.

**Initial analysis of the interviews:** The initial analysis of each interview, took place, usually before the next interview was conducted. Any reflections or thoughts, or important points in regard to various aspects of the interviews and the research broadly were recorded immediately after each interview. This helped to determine whether there was a need for further evidence (Yin, 2003). It also improved the questioning and probing process itself. The overall data analysis, which will be discussed later, was also conducted immediately after the data collection. The initial results were presented at a seminar for scholars and colleagues in the IS field in the school, and this resulted in valuable feedback.

### 3.8.2. Interview question design and objectives

During the first phase interviews all the issues related to the research topic were explored thoroughly. The questions were designed to permit the identification of a range of issues. They included the explicit and tacit knowledge flows in the organization, the different sources of knowledge for users, the user attempts to find knowledge they needed, the application of KMSs for knowledge reuse and sharing, IT and KM infrastructure, the maintenance and management of KMSs, the KMSs designs, any intermediaries and their roles, and the concerns or challenges of staff in regard to knowledge reuse and sharing and KMSs. During this stage, the interview questions served merely as a guide for the interviews and allowed the researcher to encourage the interviewees to discuss a range of relevant topics. In addition, this stage provided a rich source of evidence for the case study. It also helped by providing a clear picture from which to revise the conceptual framework and improve the design of the final data collection protocol.

In the second phase of data collection, the interview guide was more focused, as a result of the lessons learned from the first stage of the data collection and the second pilot case study conducted at the ANU, both of which contributed to the final interview protocol.

In the second stage of data collection, in most cases the interview questions and an ‘information sheet and consent form’ were sent to the participants prior to the interviews to maximize the benefits of the interview time. The questionnaire included an introduction which provided general information about the interview and
explanations of terms such as knowledge and high-value knowledge (Appendix C). No significant drawbacks emerged from sending the list of question prior to interview. On the contrary, making the questionnaire available before hand resulted in many benefits. For example, most participants had only limited time so reviewing the questions prior to the interview allowed efficient use of the interviewees’ time. Results from the initial interviews and the researcher’s peer experiences in this regard confirmed that those interviews in which interviewees read the questions before hand were richer than the interviews of those who did not.

To accommodate the two efficient types of participant, knowledge users and sharers (lawyers) and possible facilitators or intermediaries of knowledge reuse and sharing, two different lists of questions were designed. Although in essence, the questions were the same, the way they address some issues differed.

In addition to identifying and understanding intermediaries and their roles, the purpose of the second phase interviews was specifically to understand the high- and low-value knowledge flows and the appropriate intermediaries for them, the problems of knowledge reuse and sharing, and ways of improving knowledge reuse and sharing through intermediaries.

Moreover, also during this stage, a survey was conducted on a small scale as a part of the case study evidence. The interviewees filled out four tables using a Likert scale during the interview, with the assistance of the researcher. Further details about this survey are presented in chapter seven, section 7.3.2.

3.8.3. Research site (data collection site)

In this case study, the selection of the case was done purposely, not randomly because the case demonstrated particular characteristics of interest (Merriam and Associates, 2002). As explained earlier, a single case was selected for this study. Given the research problem and research questions, a knowledge-intensive large organization with KM and KMSs initiatives in place formed the most suitable site for study. So a large multi-unit law firm was chosen as the case of this study. The case is described further in chapter four.

To find these types of organizations the researcher contacted many knowledge-intensive firms such as consulting, law or service companies. In fact finding an organization to supports the case study was one of the most challenging stages of this research. Some offered only conditional or limited access which was inadequate for this in-depth case study. Finally, initial access to a large multi-unit law firm was gained. The main criterion for selecting this case was its potential to support research into knowledge intermediaries and knowledge reuse. Although it was regarded as a typical law firm, its potential to generate understanding of the intermediaries and
provide a context for creating theory was seen as more important. Therefore, in selecting this case, theoretical sampling was adopted (Yin, 2003).

After a meeting with the firm during which different aspects of the research were clarified, a research proposal and plan were submitted to the firm, and, finally, access to the firm was approved. Then, a meeting was arranged with one of the KM managers in which many general topics which were relevant to the research were discussed, as well as ways of conducting the case study.

3.8.4. Sample selection and subjects

Based on the research questions, the propositions and the conceptual framework, participants in this study should be from two groups: first, knowledge workers (knowledge users and knowledge holders); second, people who facilitate or intermediate knowledge reuse and sharing flows or processes, or are likely to do so. These people can be those involved in KMSs maintenance and management or in KM or in IT affairs in the firm. It was necessary to involve people from these two groups because the study required investigation and analysis of several issues or units, as mentioned above. So, the users and their knowledge reuse and sharing behaviors, their needs and patterns of behavior as well as their perception and the HI's perception about the facilitation and their roles had to be investigated.

From the different ways of selecting samples for interviews, a researcher can choose one specific way or several ways according to the area of research, the methodology, the purpose of research, the available resources, and his/her individual preference (Dawson, 2002). Probability samples pursue generalization while purposive samples are used for description (Dawson, 2002).

In this study, several sampling approach were employed. They were self-selecting and purposive sampling, as well as some other techniques mentioned in Dawson (2002), including snowball sampling, and convenience sampling. Saunders et al. (2003) maintain that if the purpose of the research is exploratory, self-selecting sampling is recommended. Also when it is difficult to identify or find individual cases, snowball sampling is regarded as appropriate. In the current study, during the first stage it was mainly self selecting and purposeful sampling that were applied to choose the participants, because the first stage was exploratory. In the second stage, because it was hard to identify potential or actual HI's, a snowball technique was applied, while for interviews with lawyers, typical case and convenience sampling was used.

In the first stage, the eight participants, comprising knowledge users (lawyers), people from the KM department who possibly play the intermediary roles, and IT department officials who were involved in KM projects were chosen. The sample of lawyers comprised young or new lawyers, and experienced practitioners. In addition,
the interviews were also conducted with the KM manager, librarians and staff from the IT department.

In the second phase no participants were selected from the IT department because of their minor roles in the facilitation process. Instead, other potential HIs were recognized and approached, notably Local HIs in practice groups.

The last few interviews did not contribute or add anything to the data already gathered so saturation level had been reached. This was more significant in terms of the interviews with KM department staff. Participants came from all the main branches of the firm in different cities. Similarly, the lawyers were from various practice groups, or functional areas of the firm and worked at different levels in the organization. Interviewees were both male and female with their working experience ranged from one to 15 years. Table 3.1 shows the date of the interviews as well as the interviewees’ roles (positions,) and the group to which they belonged. People from practice groups are lawyers; furthermore, there were some people in the KM team who used to practice law as a lawyer before, and some of the lawyers in practice groups had types of KM roles.

Table 3.1. Detailed list of interviews conducted

<table>
<thead>
<tr>
<th>Phase</th>
<th>Date of interview</th>
<th>Role</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>20/12/06</td>
<td>KM Consultant</td>
<td>KM</td>
</tr>
<tr>
<td></td>
<td>23/04/07</td>
<td>Developer</td>
<td>IT</td>
</tr>
<tr>
<td></td>
<td>26/04/07</td>
<td>Librarian</td>
<td>KM</td>
</tr>
<tr>
<td></td>
<td>07/05/07</td>
<td>KM Manager</td>
<td>KM</td>
</tr>
<tr>
<td></td>
<td>11/05/07</td>
<td>Technology Services</td>
<td>IT</td>
</tr>
<tr>
<td></td>
<td>23/05/07</td>
<td>Lawyer</td>
<td>Practice Group</td>
</tr>
<tr>
<td></td>
<td>05/06/07</td>
<td>Lawyer</td>
<td>Practice Group</td>
</tr>
<tr>
<td></td>
<td>08/06/07</td>
<td>Lawyer</td>
<td>Practice Group</td>
</tr>
<tr>
<td></td>
<td>28/02/08</td>
<td>Lawyer/KM Business</td>
<td>Practice Group (+KM Roles)</td>
</tr>
<tr>
<td></td>
<td>04/03/08</td>
<td>Analyst</td>
<td>Practice Group (+KM Roles)</td>
</tr>
<tr>
<td></td>
<td>11/03/08</td>
<td>Lawyer</td>
<td>Practice Group</td>
</tr>
<tr>
<td></td>
<td>12/03/08</td>
<td>Lawyer</td>
<td>Practice Group</td>
</tr>
<tr>
<td></td>
<td>18/03/08</td>
<td>Lawyer/Manager</td>
<td>Practice Group (+KM Roles)</td>
</tr>
<tr>
<td></td>
<td>07/04/08</td>
<td>Librarian</td>
<td>KM</td>
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<td></td>
<td>08/04/08</td>
<td>KM Consultant</td>
<td>KM</td>
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<td></td>
<td>11/04/08</td>
<td>Precedent Consultant</td>
<td>KM</td>
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<tr>
<td></td>
<td>29/04/08</td>
<td>KM Consultant</td>
<td>KM</td>
</tr>
<tr>
<td></td>
<td>30/04/08</td>
<td>Lawyer</td>
<td>Practice Group</td>
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<tr>
<td></td>
<td>13/05/08</td>
<td>Lawyer/Manager</td>
<td>Practice Group (+KM Roles)</td>
</tr>
</tbody>
</table>

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3.9. Data Analysis

The goal of analyzing the data was to answer the research questions and contribute to an understanding of the role of intermediaries in facilitating knowledge reuse and sharing, especially in regard to high-value knowledge. In a case study, the most difficult stage is analyzing data (Miles and Huberman, 1994, Yin, 2003), in which the role of the researcher and his/her preference and experience are important. Generally this is a very personal process (Dawson, 2002). Baptiste (2001) argues that all qualitative data analysis consists of four interrelated phases: defining the analysis, classifying data, making connections between data, and conveying the message(s). Similarly, according to Yin (2003), data analysis includes “examining, categorizing, tabulating, testing, or otherwise recombining both quantitative and qualitative evidence to address the initial propositions of a study” (p. 109).

3.9.1. Case study analytical strategies and techniques

To analyze data it is necessary, first to understand and apply appropriate analytic strategies and techniques (Yin, 2003). Saunders et al. (2003) state that the purpose of adopting and applying different analytical strategies is to transform the collected data in a way that allows the researcher to:

- comprehend and manage them;
- integrate related data drawn from different transcripts and notes;
- identify key themes or patterns from them for further exploration;
- develop and/or test hypotheses based on these apparent patterns or relationships; and
- draw and verify conclusions (p. 380).

This study used both the deductive and the inductive data analysis approaches mentioned in Saunders et al. (2003) which is elaborated in section 3.9.2. Yin (2003) explains three general strategies which are relying on theoretical proposition, thinking about rival explanation, and developing a case description. The first strategy, theoretical propositions derived from literature review, and research questions or new propositions assist in helping to concentrate the mind on certain data and disregard other data. The second strategy asks the researcher to think about the rival explanation. The final strategy, is used when it is difficult to apply the first two strategies, or when the main purpose of the case study is descriptive, when the description helps to find appropriate causal links for analysis.
All three strategies were applied in this study where they were appropriate. For the first and the second research questions, which aim to find the knowledge intermediaries and identify their roles, the last strategy, namely developing a case description was the main strategy used, because they helped the researcher to identify and propose two types of HI taxonomy (one of which was not found in the literature review), and find and describe the main roles of HIs. However, for the last research question, which concerns the appropriate intermediaries for high-value knowledge, the first two strategies, namely theoretical proposition and rival explanation were the major strategies considered and applied.

From another perspective, Dawson (2002) suggest four types of data analysis for qualitative data, namely, thematic, comparative, content, and discourse analysis. Thematic analysis and content analysis method were mostly adopted in this study, in which the collected data were coded and then grouped into different categories. Some of these categories were developed prior to the data analysis, based on the research questions and the initial framework. Nevertheless, the researcher remained open to any new emerging categories.

Analytical techniques, besides helping with the appropriate analysis of data, also increase the internal validity of the research (Yin, 2003). Of the five techniques described in Yin (2003) two techniques, pattern matching and explanation building were applied in this study. Pattern matching can be used for descriptive case studies when the researcher predicts a pattern concerning specific variables before data collection (Yin, 2003). In this study the researcher predicted the knowledge intermediaries and their roles, so during the data analysis the predicted result and the actual finding of the case study were compared. In addition, rival explanation as a pattern was also considered in the data analysis. In the exploratory part of the research, which develops the typologies, explanation building techniques and pattern matching were used to justify HIs categorization.

3.9.2. Data analysis processes: categorization and coding

Saunders et al. (2003) introduce four general processes for data analysis, which have an iterative nature, to achieve the purposes of the research and organize the data in a well-structured way. This study has applied most of them as is explained here. In this stage other analytical aids were also used. This included the summaries and notes which were driven from the organizational documents, the records of each interview, and the researcher’s reflections and memos which had been stored in the case study database.

**Categorization:** First the data were categorized according to meaningful categories or codes, based on deductive and inductive approaches. Initially, based on the research questions and objectives, the research framework, and the literature, some general categories were developed.
Further, and, sometimes, different categorization and new categories or themes emerged during the analyses. The titles of these categories came from the data, the research framework and the literature. Rossman and Rallis (2003) differentiate between categories and themes; categories can be words or phrases that describe a piece of data. In contrast, themes are more subtle and tacit, and can come from categorization after analyzing and understanding the data.

**Unitizing data:** This process involves attaching a label or a category to the relevant ‘bit’ or ‘unit’ of data. Different ways of coding such as open coding, axial coding, and selective coding, are explained in the methodological literature (Flick, 2002) and were considered and applied in this study. In the first stage of analysis, open coding was more dominant.

NVivo software was used in the data analysis process as it facilitates the analysis of data particularly categorization and coding. Most of the data were labeled and categorized in different hierarchical tree nodes, but some were labeled as free nodes. Later, in the iterative reviews and analysis that considered the relationships of different codes and categories, some of the free codes were transferred to the appropriate tree nodes.

As mentioned earlier, codes and categories were driven through inductive and deductive analysis. As a deductive approach, first, based on the research questions, the literature review and the interview questions, some expected codes and categories were identified. For example, based on the initial research framework the type of intermediaries and their roles, including technology-oriented and knowledge-oriented HI and the list of their functions, some codes and categories were known to the researcher. So, they were used initially in data analysis.

However, the inductive approach played significant role in data analysis and the result of study mainly was driven from the data. As much as possible, all of the data mainly interviews has been coded and re-coded in the NVivo regardless of those pre-known codes and categories. The codes (nodes) and categories and their relationships have been reviewed and revised several times. Some NVivo tree nodes (codes) and nodes of the data analysis as examples are shown in the Table 3.2.
### Table 3.2. Examples of some codes and categories of data analysis

<table>
<thead>
<tr>
<th>Tree nodes</th>
<th>Nodes</th>
<th>Child nodes</th>
</tr>
</thead>
</table>
| **Type of human intermediaries (HI)** | KM team intermediations (formal or central HI) | Intermediation of KM team  
Current roles of KM team  
Possible or expected roles of KM team  
Librarians’ roles and expertise  
Suitability of informal HI for some roles  
Characteristics of KM team  
In/efficiency of KM team  
Lack of capacity of KM team for some facilitation roles  
KH team relation with Lawyers |
| | Others intermediation (informal or local HI) | Existence of informal HI  
Current roles of KM lawyers  
Suitability of informal HI for some roles  
Characteristics of informal intermediaries  
Efficiency of KM lawyers Possible or expected roles of KM lawyers  
Possible types of informal intermediaries KH lawyers relation with Lawyers |

For example, the location-oriented type of HI intermediary emerged from data through this inductive approach. While the literature review and study’s initial framework (theoretical proposition) suggested just the role-oriented typology of HIs in answering the first research question, data analysis revealed other types of HIs. The researcher realized that the interviewees were talking about different things, so during the coding of the data these two types were considered as two categories or tree nodes in NVivo, and then the relevant themes that the participants discussed about them were identified as nodes. After the first round of data analyzing and coding, the researcher contemplated again on the codes and categories and the relationships among them. In this process some of the codes merged, some were removed and some were renamed or changed. Out of this analysis the chapter five, the location-oriented typology of HIs and its justification, was produced.

For the second research question, the lists of functions were developed inductively by analyzing the case study data (interviews and documents) based on a combination of following logics: the problems of knowledge reuse and sharing which require the HI’s function, the performance of the function by HI (which participants confirm them useful), and the requirements for better facilitation of knowledge sharing and reuse. These three logics were the basis of the categories and code development for the analysing the relevant data. In interviews, participants answered the questions about the problems of knowledge sharing and reuse and suggested the ways and possible people who can solve them. These lists of problem were the three node names of problem categories in the NVivo. Also the current functions of human
facilitators or intermediaries were categorized in different tree nodes. These analyses led to developing the list of functions of HIs which are presented and justified in chapter six.

For the third research question, participants' perceptions about the high and low value knowledge that different intermediaries facilitated as well as the pertinent questionnaire were the basis for analysing the relevant data.

**Recognizing relationships and developing categories:** Due to the iterative nature of the data analysis, and the constant comparing and contrasting of the categories with the research questions and objectives, some new categories and themes were developed and others were merged or deleted. Different graphs, networks, mind-maps or concept maps helped finding the relationships and themes and in developing new insights.

**Developing and testing hypotheses to reach conclusions:** By finding and understanding the relationships between categories and themes, patterns were found in the data; in other words, the answers to the research questions were revealed. This led to the conclusion, which was the identification of the intermediaries and their typologies, and their roles in successful knowledge reuse and sharing, together with their impact on different flows of knowledge.

The quantitative part of the study is not the main source of data; it uses simple descriptive statistics as a complementary to qualitative data during interviews. This is explained more in chapter seven, section 7.3.2. However, it serves some purposes such as providing a basis to prompt the interviewees to talk more about the relevant aspect of the research, giving the researcher an ability to quantify their ideas and present them visually through charts, as well as using it to confirm and complement the qualitative data as another method of data collection (triangulation).

Therefore, for analyzing the quantitative survey data, Microsoft Excel was used. First, the data concerning the amount of high- and low-value knowledge that participants share with or get from different target/sources, were entered into a spreadsheet, quantified for calculating averages, and then the appropriate charts were drawn to show comparative results.

### 3.10. Case Study Validity and Reliability

Research and its results should be sound. Yin (2003) offers a list of tests, which can be applied to case studies, for evaluating the quality of empirical social research. He also identifies several tactics that can be adopted during in different phases of the research to secure validity and reliability. These are summarized in Figure 3.2. These tactics have been applied as far as possible in the current study. This section evaluates the research according to these tests.
<table>
<thead>
<tr>
<th>Tests</th>
<th>Case study tactic</th>
<th>Phase of research in which tactic occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construct validity</strong></td>
<td>• Use multiple sources of evidence&lt;br&gt;• Establish chain of evidence&lt;br&gt;• Have key informants review draft case study report</td>
<td>• Data collection&lt;br&gt;• Data collection&lt;br&gt;• Composition</td>
</tr>
<tr>
<td><strong>Internal validity</strong></td>
<td>• Do pattern-matching&lt;br&gt;• Do explanation-building&lt;br&gt;• Address rival explanations&lt;br&gt;• Use logic models</td>
<td>• Data analysis&lt;br&gt;• Data analysis&lt;br&gt;• Data analysis&lt;br&gt;• Data analysis</td>
</tr>
<tr>
<td><strong>External validity</strong></td>
<td>• Use theory in single-case studies&lt;br&gt;• Use replication logic in multiple-case studies</td>
<td>• Research design&lt;br&gt;• Research design</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>• Use case study protocol&lt;br&gt;• Develop case study database</td>
<td>• Data collection&lt;br&gt;• Data collection</td>
</tr>
</tbody>
</table>

Figure 3.2. Case study tactics for four design tests (Yin, 2003, p. 34).

### 3.10.1. Construct validity

Construct validity concerns the establishment of correct operational measures. This study has, as much as possible, implemented the tactics that Yin (2003) suggests, including using multiple sources of evidence or triangulation, establishing a chain of evidence and having key informants review the draft case study report.

As described in section 3.7, this study has used multiple sources of evidence (data sources). In addition to interviews, organizational documents and artifacts as well as a questionnaire were used to produce convergence of evidence. For example, interviewees not only rated the amount of knowledge that they contributed to a KMS but they also explained and discussed this in the interviews. Moreover, the interview data were collected from multiple informants, including knowledge users and sharers, potential HIs, such as the KM team, librarians and IT people.

As far as possible, a chain of evidence approach also applied in this case study and all the critical facts relevant to the research were considered. Yin (2003) states that the establishment of chain of evidence allows an observer to trace a path from the research question to the conclusion or back from the conclusion to the research question. In the result chapters of this thesis, a sufficient amount of evidence in the form of quotes from participants is presented to support the arguments. Moreover, a
case study database and protocol were developed, and are described in the reliability section.

The key findings of this study have been sent to the firm, main informants, and then an interview was conducted with one of the key participants in which the result of the study was reviewed and discussed. Papers produced as a result of this research and a copy of the entire case study report, this thesis, has been also sent to the firm.

3.10.2. Internal validity

Yin (2003) maintains that internal validity is only a concern for a causal or explanatory study. As this study is rather exploratory and descriptive, internal validity is not a concern. However, explanation-building and rival explanations techniques were considered in the data analysis largely to justify the different categorizations of the HIs and establishing appropriate intermediaries for high-value knowledge reuse and sharing.

3.10.3. External validity (Transferability)

External validity deals with the generalizablity issue in a case study. According to Yin (2003) the generalizablity of a case study is the major concern of many critics of case studies, who compare the case study with the a survey, which is generalizable to a wider population. He emphatically rejects this analogy and answers it in the following way:

This analogy to samples and universe is incorrect when dealing with case studies. Survey research relies on statistical generalisation whereas case studies (as with experiments) rely on analytical generalisation. In analytical generalisation, the investigator is striving to generalise a particular set of results to some broader theory (p. 37).

Therefore, generalization in a case study is related to the development of theory, and statistical generalization is not considered; rather there is “analytic generalization in which a previously developed theory is used as a template with which to compare the empirical result of the case study” (Yin, 2003, p. 32). Furthermore, Saunders et al. (2003) believe that the generalizablity of a case study rests on relating case study findings to theoretical propositions and showing the wider significance of the specific findings. This study has done this, as discussed in chapter eight mainly and partly in chapter five to seven.

3.10.4. Reliability (Dependability)

A reliable study is one in which errors and biases are minimized so that if someone other than the researcher conducts the same case study with the same procedures they find the same result (Yin, 2003). Yin (2003) recommends using a case study
protocol, and a case study database to fulfil the reliability requirements. This has been done in this study.

As far as possible all the processes of the case study were documented. The case study database in the form of organized folders (computerized, and partly manual) was developed and all the relevant data including the case study and interview guide, interview schedules, interviewee details, the researcher’s notes, voice files, transcriptions, collected documents, NVivo files, categories and codes and conceptual maps recorded in it. Moreover, prior to data collection, at the stage of designing the interview questions, the links between the research questions and the interview questions were developed. Likewise, the same procedures were repeated in the analysis stage, so the links between the research questions and the research framework with the analytical codes and categories have been established.

Other researchers have suggested similar strategies or tactics for ensuring reliability and validity. For instance, Merriam and Associates (2002) list some strategies for supporting both validity and reliability, almost all of which were applied in this study. They include triangulation, use of memos and field notes, checking the data (and interpretations) with participants, discussion of various aspects of the research with experts (supervisory panel and colleagues), presenting rich and thorough descriptions, and acknowledging limitations. The limitations of the study are acknowledged in chapter nine.

3.11. Ethical Considerations

Ethical considerations, especially in qualitative research which involves one or more human subjects, are very critical. Saunders et al. (2003) define research ethics as the appropriateness of the researcher’s behavior relative to the rights of the research subjects or those who are affected by the research. It should be considered in design and initial access, data collection, analysis and reporting, and data protection stages. The privacy of the participants is regarded as a major research issue.

In accordance with the Australian National University (ANU) research regulations and policies, the details of this research on regard to ethical issues were approved by the Human Research Ethics Committee in November 2005. Subsequently due to changes in the research plan, the processes and the participants, the revision of research details and ethical considerations were approved several more times. The researcher has paid strict attention to all the ethical considerations during the entire process of this research.

To comply with the ethical requirements, first, informed and written consent was obtained from the organization under study. Following an initial meeting and discussion with the gatekeeper, one of the managers, a clear and detailed research plan was sent to the firm. Moreover, the plan confirmed that participation in the
research was voluntary, for both the firm and the individual participants and that the firm’s and the participants’ privacy and confidentiality would be protected. It clearly described the way the data would be treated, as well as the benefits and costs of the research for the firm. After approval of the plan, the research agreement was signed; it mainly emphasized the confidentiality and privacy of the firm.

Prior to any interview the participants were asked to sign the “information sheet and consent form” (Appendix B). In this form it was declared that participation was completely voluntary and that they had the right to withdraw at any time without providing any reason. They were informed that the data would remain confidential and that their identity as well as the firm’s identity would remain suppressed.

Interview times were arranged based on the convenience of the participants and in the interview they answered the questions freely and in a friendly manner. Method and place of conducting interviews were based on their consent, in such a way as to minimize disturbance to them.

The interviews were not recorded unless participants had given their written agreement. To protect the anonymity of the interviewees, relevant codes were used in place of real names in the transcription of the interviews, and any identifying data were removed. According to Yin (2003), anonymity can be applied at the level of the whole case and at the individual level. In this study, anonymity has been preserved at both levels. The interviewees’ voices and transcriptions, and any relevant documents were saved and stored securely in password protected files or a locked cabinet.

Another ethical consideration is the need to maintain objectivity during all the stages of the research process (Saunders et al., 2003). So, in the analysis stage the data have been interpreted and reported as they are, not selectively. However, it is acknowledged that in qualitative and interpretive study there is always an impact of the researcher in different processes. Finally, the data are reported in a way such that the identities of the participants and the firm are not recognizable by their characteristics.

3.12. Summary

This chapter has explained the research methodology in detail. A single qualitative case study has been conducted due to the exploratory nature of the research issue. This study has been conducted in a knowledge-intensive large multi-unit organization. Combined data collection methods, including interview, document analysis, and investigation of the organizational KMSs have been used. However, evidence came mostly from interviews with different types of respondents. The open-ended, semi-structured interviews allowed better understanding of the issue and provided rich data as well.
Moreover, in this chapter the methods of selecting a sample for interviews such as snowball self-selecting sampling have been described. The data were analyzed using different and suitable analytical strategies with the assistance of NVivo software. The quality of the case study has also been assessed against the criteria provided by Yin (2003) with respect to construct validity, external validity and reliability.
RESEARCH SITE DESCRIPTION

4.1. Introduction

As mentioned in chapter three, a large law firm was selected as the case study for this research. This section further describes the features of the firm in order to set the context of the research. However, the real identity and specific details about the firm have been omitted for the reasons of confidentiality. To prevent the firm’s identification some non-critical information is changed. Section 4.2 introduces the firm. Section 4.3 briefly describes the background and the structure of the KM in the firm; and Section 4.4 introduces the KMSs and tools. Because IT-based systems and tools as intermediaries are significant in this study, these are described in detail. The last section summarizes the chapter.

4.2. The Firm

The case chosen for this study is a multi-unit law firm in Australia. The firm is a long-established, large and growing Australian commercial law firm, which has international status. It is a partnership type organization with staff numbering more than 1000. The operational units consist of industry sector-focused groups working collaboratively with clients. It has various distinct functional areas and different branches. Each office is managed by a managing partner and under them are the practice group heads, partners, senior lawyers, lawyers and paralegals.

The structure of the company is decentralized into operating offices and divisions based on major areas of service and it is for this reason that it can be regarded as a multi-unit firm. Each office is composed of several practice groups or units. Each unit focuses on one of the service areas. Some activity areas of the firm include Construction, Engineering, Financial Services, Mergers and Acquisitions, Technology and Communications, Dispute Resolution, Tax and so on.
In addition to different practice groups, some shared service units such as KM, IT and marketing, support the practice groups’ business. A central IT unit provides technical support for firm-wide systems, IT-based tools and IT infrastructure, such as networking services. But the main focus of the IT unit is infrastructure, and in affairs relating KM, does not have much contact with users. There is a KM department that works more closely with practice groups and users. The next section describes this further.

4.3. KM in the Firm

The firm’s value relates to professional exchange and client services and; as a result, its core business strategy is knowledge-driven. Accordingly, it established a KM department and initiated several activities such as implementing different KMSs in the firm, and improving team operations and the knowledge sharing among its professionals. It is expected that by using KMSs and the Intranets, productivity would increase through knowledge sharing and reuse, and duplication of work would be reduced.

A KM initiative was initiated more than ten years ago and is run by a group of staff with different specialities such as KM, IT, communications, librarianship, and law. There are mainly three groups in this department including librarians, precedent consultants and lawyers, and KM and KMS consultants and coordinators. The librarians’ group is an important component of the KM team; it includes librarians engaged in research, collection, business, and systems and library technical tasks.

The KM department shares with the IT department the same director, who reports to the head of the firm. The KM department is centralized, operates firm-wide and provides services for all divisions and units. But they are distributed in each office. So, each office and each practice group or division does not have a separate KM unit or staff of their own and, despite the KM staff’s location being in each office, they do not limit their service to that office but rather serve the whole firm. There are certain people in some practice groups that perform various KM roles that will be explained chapter five. The KM team’s many functions are explained in chapter six.

The KM vision of the firm is to provide KM service and research to the user to enable better decision-making for the practice and business of law. The main function of the KM team is to provide information or knowledge quickly and thoroughly to the lawyers and help them to maintain and share information through facilities such as meetings and KMSs.

4.4. KM Technologies in the Firm

Describing in this section the KM-relevant technologies used in the firm is important for three reasons: first, KMSs as a part of case description presents the context of the
research site; second, different KMSs or KM tools are discussed in various sections throughout this thesis, and participants refer to them in the interviews, so they need to be described; third, although IT is not the focus of this study, IT is an important intermediary and facilitator of knowledge sharing and reuse, and some roles of HIIs involve this kind of intermediary.

IT in the firm that is applied for knowledge reuse and sharing can be divided into two main groups: IT-based KMSs, and IT-based KM tools.

4.4.1. IT-based KMSs

The three main KMSs in the firm include Intranets, Knowledge Database (KDB) and Precedent Database. Other systems also have been installed and used in some practice groups in the firm but are not as important or dominant in knowledge reuse and sharing as these three databases. The importance of these three KMSs was revealed during the first phase of data collection and thus they were included in the second phase of data collection, especially in the survey as the main KMSs of concern. However, in the data collection, interviewees were free to talk about all types of KMSs that were important for them.

There is also a document management system in the firm that stores all previous legal work done and which staff sometimes use to find information. Furthermore, in this firm, as elsewhere, another source of some types of knowledge is the public internet.

(1) Intranets

The firm implemented several different Intranets that can be classified into two types: Divisional Intranets (DIs) and other shared Intranets such as shared-service Intranet or client-based Intranet. DIs are specialized for each practice group or division, although other divisions can use them. These DIs contain all relevant materials of a certain practice group, while shared Intranets offer shared and common services to all groups, for example, the Intranet of the marketing group or the KM team Intranet. Moreover, some Intranets are implemented based on different clients or industries, and provide information about them to lawyers.

Intranets are very important KMSs which almost all staff use. A DI is like a portal and includes commonly used websites such as those of clients and specific industries, resource material, the media, libraries, research tools, and various databases such as the Precedents database, KDB and LexisNexis\(^1\); it links to the Intranets of other

\(^{1}\) "LexisNexis is a leading global provider of business information solutions to professionals in law firms, and .... LexisNexis offers a variety of legal solutions and software for all types of law practices. LexisNexis Law offers tools and solutions to help law practice with client development and law practice marketing, legal research, law practice management, and other litigation solutions" [http://law.lexisnexis.com/default.aspx](http://law.lexisnexis.com/default.aspx)
divisions and shared services. It provides know-how tools, research facilities, meetings or learning seminars schedules, internal phone books, and links to the KM team, administrative functions and more. The default screen or homepage of lawyers' computers in the workplace usually is their DI and they use it frequently.

Every practice group (division) has its own Intranet. It provides needed information and knowledge for the group. For some groups it provides vital information, for example, regarding courts or cases (highly useful if updated regularly). One of the interviewees from the KM team stated that the Intranet is “like a one stop-shop for all the information there should be … which will make your work easier”.

Intranets are technically run by KM departments, but in terms of content, DIs usually are monitored and facilitated by the group-appointed Intranet coordinator and sometimes partly by the KM team. Lawyers or their secretaries, in coordination with the KM team and the group’s Intranet coordinator and division superiors, input data in the Intranet. It is a facility that keeps the user up-to-date:

What goes in there would be a new story about relevant changes to the law or important cases that our partners can see, that the people in that division should be aware of, matters such as chief executive presentations. . .

Intranets have the capacity to provide essential and high-quality knowledge and information in a central place, which can save the users’ time and increases their efficiency and effectiveness. The following quotes are from two lawyers (users):

It has everything you really need, it gives you the shortcuts so every time I want to go … [no need search to public engine] … give you straight the area you need; and this is the knowledge that you can easily gain is not going to take you two hours to gain that knowledge, it can take five minutes through the use of the systems.

I assume it is helpful that is a lot faster, it is an easier way to get information, so I can feel the benefit of it, provided that the information that is put in there is good quality information and that it is up-to-date.

Although lawyers contribute some information to the DI, these are not the main databases to which users contribute important information. However, this differs from one group to another. For example, the data show that some groups put good industry-relevant knowledge on their DI, while other groups’ DIs are not updated and maintained well. Moreover, some of the knowledge that goes into the DI is provided by librarians from the KM team, such as subscription resources and legal research materials like industry newsletters and topic-specific newsletter updates.
(2) Knowledge Database

KDB is one of the firm’s KM initiatives that was implemented several years ago as an IT-based knowledge repository. It is called by a different name in the firm, but in this thesis, and in the interviewees’ quotes it is changed to the KDB to keep confidential its identity. It is the main facility for internal knowledge sharing and reuse. Its formal purpose, stated in documents, is providing a facility to benefit from already done works in the firm through maximizing knowledge usage and value. Lawyers contribute original substantive advice or written works to this database. It is a document-based repository of mostly internally and some externally produced knowledge such as case notes, advices, agreements, useful and various articles or presentations that lawyers have written or published for reuse. The KDB is a researchable database which is common to all practice groups but each group has its own section. Lawyers usually access this repository through their Intranet home page.

KDB is a useful IT intermediary that gives lawyers the facility to contribute their own knowledge or reuse already produced knowledge of their colleagues in similar areas. This saves time and money for the firm as well as preventing “reinventing the wheel” as a user says in this regard:

That is very good, I …search KDB for a particular issue and somebody already [had gone] through and analyzed all the cases on that particular issue, so you do not have to read, say 30 cases to be able to provide an answer that is already done. It saves time, it is not only time-saving device, you don’t have to reinvent the wheel every time you have got do something, so it is a time-management tool.

In addition, this KMS potentially can prevent the corporate knowledge disappearing when an employee leaves, as his/her knowledge and experience is documented and stored in the KDB. Although there is a data entry protocol, “keeping update” procedure and quality assurance for KDB, generally interviewees did not think there was much useful or updated knowledge in the database, especially with reference to particular groups’ or sections’ interests.

(3) Precedent Database

Another KMS that is frequently used, especially in some groups, and is regarded as an important database is the Precedent Database. Every type of organization may use one form of knowledge or database more than others, and also in the same organization some practice areas may use or reuse one type of knowledge more than others. One form of knowledge reuse that improves lawyers’ performance in our case-study law firm is precedents. Precedents are templates that are reused frequently, such as court forms and pro-forma (typical) contracts and so on. The data
showed the Precedent Database was a useful tool for the lawyers. It saved time for users as in many cases, they did not have to produce documentation from scratch; they just reused an already developed body of knowledge.

Precedents are materials that usually are developed internally and reused frequently. As the data showed, they are different in value, because some are simply the frame or format of a type of document but some precedents are developed as a full example of the way a particular transaction should be conducted, with associated explanations or annotations of issues around that transaction.

Usually there is at least one precedent coordinator in a practice group to do activities such as allocating people to draft precedents and update them. Moreover, a team of consultants or facilitators of precedent development in the KM department is involved in technical aspects of precedent development, database running and maintenance. They help put together template documents. Most of the lawyers interviewed emphasized the importance of the Precedent Database.

4.4.2. IT-based KM tools

In addition to KMSs, IT provides other collaboration tools for KM, mainly to connect staff and thereby facilitate knowledge sharing and reuse. All the knowledge that users need are not in KMSs and people do not contribute or share all of their knowledge through KMSs. They mostly share or get important and valuable knowledge, especially tacit knowledge, directly with or from others; IT-based KM tools can partly facilitate this direct connection of knowledge workers.

The range of technologies that facilitates in this respect includes email, discussion boards, e-room, video-conferencing or telephone-conferencing, SharePoint, Lotus notes, Wikis and so on. Some of these are used for online connection and flow of information between clients and staff but the more important ones are those which are used to facilitate more interactive or instant sharing of knowledge. This section does not explain or describe all of them because, as previously mentioned, the purpose of this section is to introduce overall the technology used in the case-study firm. However, the rising importance of the Wikis merits further discussion in the next paragraph.

One of the important and new collaborative tools for knowledge exchange is the Wiki that was recently introduced in the firm and implemented in some divisions as a pilot facility. Wiki is an innovative venue and approach for knowledge sharing; it has a similar set-up as the now-popular online Wikipedia, but for a business or professional organization is for internal use, providing the opportunity and facility for the knowledge worker to spontaneously share their knowledge and discuss certain topics. Each practice group may create different topic areas for discussion in the Wiki. In the case study, although there was some hope that staff would use this
technology more, it appeared to be a struggle to get people to use it. There is a threat that it will become a mere document repository instead of a communicative and collaborative tool. Nevertheless, there was some expectation that people would eventually use this technology more than others, and even more than KMSs, because it is user-friendly and also has some features that assisted with direct knowledge exchange.

4.5. Summary

This chapter briefly described the research site. It is a large multi-unit law firm that already has initiated KM and implemented several KMSs. The KM department of the firm is centralized and provides services for the whole organization. Two types of technology are used in the firm: IT-based KMSs such as Intranets and the Precedent Database; and IT-based KM tools such as a Wiki. Now, having described the research methodology and the case organization, the three coming chapters present the findings and analysis of the study.
THE LOCATION-ORIENTED TYPOLOGY OF HUMAN INTERMEDIARIES

5.1. Introduction

This chapter addresses the first research question:

1- Who are the intermediaries or facilitators of knowledge reuse and sharing in a knowledge-intensive multi-unit organization?

In this chapter a HI typology (classification) is developed according to their characteristics, mainly their position or location. It shows how HIs can be categorized into two groups: Central and Local HI. This location-oriented typology arose from the case study.

First, in this chapter, section 5.2, we show how these two types of HIs exist in the case study. Then we show the need for both types and how both add value in section 5.3. In section 5.4 we discuss and analyze the issues around this classification such as the feasibility of having these two types in an organization. The chapter concludes by briefly relating this typology to prior literature in section 5.5. The overall significance will be discussed in chapter eight. Finally the chapter summary is presented in section 5.6.

This chapter is one of the three results chapters. Chapter six shows the roles HIs fulfil to facilitate knowledge reuse and sharing (which answers to the second research question); and chapter seven relates intermediaries to high-value knowledge reuse and sharing (answers to the third research question).

5.2. The Typology of Human Intermediaries

This section introduces and describes the location-oriented typology of HI. The case-study data including interviews and organizational documents indicate that two types of HI in the firm intermediate or should intermediate, knowledge reuse and sharing in
the large knowledge-intensive multi-unit law firm studied. Chapter three, section 3.9.2, explained how the typology was derived from the data analysis. Two categories are recognized: Central HIs and Local HIs. Each is discussed in turn.

5.2.1. Central Human Intermediaries

According to the data, in the case of the study, which is a large knowledge-intensive organization, a team of staff formally manage the organizational knowledge and facilitate knowledge reuse and sharing. They form an important department in the organization called a KM department or KM team. This department encompasses a team of people who have different expertise including KM, communication, library, IT, multimedia and sometimes the specialized knowledge of the organization's business and so on. These staff are often regarded as shared service providers, and serve the whole organization (including different units or divisions). It seems that these services vary depending on many factors such as the business of the organization, the stage of KM in the organization, the culture, and the managers' support and so on. In the case under study (hereafter referred as 'the case'), their activities mostly consist of providing IT infrastructure, designing and implementing KMSs, training users, and library services.

Based on the definition of knowledge intermediaries or facilitators, and on the functions and positions of KM team members in the firm, we identify one type of HI which we call "Central HIs", because they are assigned the job of facilitating knowledge reuse and sharing across all units of the firm.

5.2.2. Local Human Intermediaries

Apart from the Central HIs, the case study revealed another group of people in the case that act, or should act, as intermediaries in knowledge reuse and sharing. However the span of intermediation by these HIs is not the whole organization but rather a specific unit or practice group. Although they are facilitating knowledge sharing and reuse same as the Central HIs, they generally have different functions and characteristics in the facilitation. Not only in the type of their roles, and the span of activities, but also in the approach, location, proximity (closeness) to the users, and their expertise, are they differentiated from the Central HI and provide a unique opportunity for intermediation. We call this unit/area-specific HI, 'Local HI', because he or she situated within a unit and serves a particular practice group. Local HIs may be regarded an informal HI in compared to the Central HI, because while they are not primarily delegated to the facilitation roles, they may perform intermediary functions along with their other activities.

The Local HIs may not generally be recognized as KM people, as they belong to the different units, and are usually practitioners of the core business, in this case, lawyers. They are usually assigned by the head of the divisions, depending on the
division's activities and division's interest in better knowledge reuse and sharing. Local HIs are more context-specific; their existence or their roles in each division may vary from, for example, two persons in a group to a part-time person. It means that one group may have one full-time person dedicated to KM, and the other group may have just a person as KM coordinator who may spend for example, just five percent of his or her role on KM facilitation. They may have different titles such as KM coordinator, KMSs coordinator, KM lawyer, best practice manager, and so on.

5.3. Justification of the Typology

To justify this typology, we first explain that both types of intermediaries exist in the case. It is argued that the existence of both types is necessary for the successful facilitation of knowledge reuse and sharing. After this we will explain some of the specific functions of the Central HI as the facilitators, and then we argue that the Central HI also lacks some qualifications and ability to do some other aspects of the facilitation. This leads us to the final part which explains the specific roles that can or should be performed by the Local HI which would make its existence necessary. This section focuses on justifying the Local HI type because the existence and importance of the Central HI is previously examined, and the contribution of this study is introducing and justifying the concept of the Local HI.

5.3.1. Existence of both types of HI in the case study

(1) Existence of Central HI

In describing the case study in chapter four, the KM department of the firm (the Central HI) was introduced. Central HIs' major role is managing knowledge and facilitating or intermediating knowledge reuse and sharing. The essence of the KM activities that are performed by Central HI in the firm was mentioned by one of the KM managers as:

> Getting the right knowledge to the right people at the right time and, helping people share and use that knowledge in ways that help drive value for the firm and clients.

Three main areas of activities of the Central HIs in the firm, namely the library, precedent and KMSs are directly involved in facilitation of knowledge reuse and sharing. They facilitate knowledge flows at the firm level across all units. This type of HI mostly focuses on library and IT functions:

what we do, the KM team does a few different things so there is a library team and they manage the library resources and research resources, ...there is a precedent team and the precedents team maintain, I mean the project team which
essentially have more technical focus so we work a lot with things like Intranets, [firms] technologies, databases, reuse of knowledge and things like that.

The roles and detailed functions of Central HIs we will be discussed in different sections.

(2) Existence of Local HI

A large multi-unit organization such as a law firm usually works in many different areas (practices groups or divisions) in different branches (cities), and sometimes in different countries. These practice groups for a law firm can be, for example, Tax, Construction, Dispute Resolution, Infrastructure, Engineering, and Finance. Each of them has different specialities, different experts, and knowledge needs which make them a type of community of practice that we call in this research ‘practice group’, ‘unit’ or ‘division’.

In the case, almost all practice groups have a kind of Local HI with different titles who facilitate knowledge reuse and sharing in their own groups implicitly or explicitly. Some groups assign a full-time lawyer to do the facilitation or KM activities, but other groups have a lawyer who just dedicates a part of his or her time to the facilitation. In some groups, the facilitation is the main job of the Local HI, but in other groups the person’s main job is not the facilitation, they are usually the practitioner and do partly KM jobs because they are assigned to do so, or they are interested in it, or have some strengths in facilitation.

In some groups even the Local HI is not the same person; the role of KM facilitation or coordination is assigned in turns or shifts and most of the team members become the Local HI at one time or another. In some groups the role of Local HI is performed in the form of a committee; that is, a KM committee every so often is convened to facilitate the KM activities of the practice group. This Local HI is called by different names in the groups such as Know-How or KM lawyer, committee, best practice managers, Intranet coordinator and so on: “Each division or section has a Know-how lawyer and they coordinate ..., for our section [the person] is senior associate lawyer” (More in Appendix D.1).

The next part discusses the specific roles and impact of the Local HI which justifies its existence and importance. Figure 5.1 illustrates an example of Central HI and Local HI in an organization structure.
5.3.2. Need for Central HI: Special roles which can/should be done by Central HI

Here briefly we show that the Central HI is necessary for facilitating knowledge reuse and sharing. An important part of the facilitation can best be performed by a group of central, firm-wide intermediaries (or federated KM service provider in the firm) who are dedicated to just KM activities.

The main distinct functions of the Central HI in the firm are two-fold: providing external and internal knowledge sources for users which can be summarized as library activities such as subscription to needed databases for users; IT supports which include providing and managing KM-relevant IT infrastructure, systems and tools. So the KM team is responsible for introducing, designing, implementing and maintaining the KMSs such as Divisional Intranets, and IT tools such as email and ‘Wikis’. Also, the IT support includes training users and supporting technology usage.
in different ways such as helpdesk services. These activities can be best performed firm-wide and it is not economic or even possible to have every group run and manage the KM and IT-based infrastructure of the group.

In chapter six which describes the technology-oriented and knowledge-oriented HI roles, these functions are explained in detail and indicate the roles of Central HI. The present chapter highlights some of the interviewees’ ideas about the importance and need for Central HI in terms of the distinguishing the functions that they perform. For many reasons interviewees argue that the Central HI is necessary, for example, one of the lawyers who also performs the role of Local HI believes that the KM team has a firm-wide perspective on KM issues which KM lawyers in the local groups do not have:

I think the advantage of KM team they get a firm-wide perspective on issues and which someone in the group such as me I don’t get to see the firm-wide perspective.

Central HIs have different qualifications to be able to facilitate knowledge reuse and sharing such as library, IT, multimedia, knowledge of the organization’s profession, and so on:

Some people have straight librarian knowledge like their whole degree was librarianship others have the combination background like communications, some people like me have combination [of] IT and library background; Some have legal and library background, some have a straight legal background then they work within like web companies like a start-up that sort of thing (More in Appendix D.2).

Therefore, the Central HI is in the best position and condition to maintain the KMSs and provide technical support as well as library services. Moreover, they are in a position to oversight all the practice groups and transfer best practices in KM to other groups. Some more examples of interviewees’ quotes indicating the special roles that can be performed by Central HI are in Appendix D.3. However, according to data, both type of HIs are required because Central HI cannot perform all the facilitation roles.

5.3.3. Insufficiency of Central HI as a comprehensive HI

One rationale that requires having a different type of HI other than the Central HI is the inability and lack of capacity of the Central HI to perform all facilitation functions for successful knowledge reuse and sharing. Here seven reasons from the case study show the insufficiency of Central HI in the facilitation process which in turn justify having a Local HI.
1. The responsibility of KMSs is with the divisions, not Central HI: Although the Central HI provides KMSs, training and consultancy for divisions, the responsibility of running KMSs for knowledge reuse and sharing is with the divisions. So the KM team does not do much nor is able to do much about the KMSs in terms of its content such as updating, categorizing and other knowledge work:

...they [KM team] don’t do anything with our Divisional Intranet (DI) they do very little with our DI, I may ask them to get some information for us or to change the structure of the DI but apart from that they will do very little contribute to our DI (More in Appendix D.4).

2. The general approach of the Central HI: The data show that the Central HI is unable to perform the facilitating role within the groups completely or appropriately due to the general approach that they have in which they provide services for the whole firm:

One of the weaknesses I think in the KM team here in [office X] is that they service the entire firm but the entire firm split up into the different area of law ..., so it is fairly general approach but if you had someone in this practice group like ..., then that would be perfect (More in Appendix D.5).

3. Lesser impact of Central HI in facilitating knowledge sharing and reuse in units: Some of the interviewees from the practice groups believe that generally the shared services groups including KM department which are not doing the main business of the firm usually are not very effective, instead their role is mostly bureaucratic and clerical. So, users, even some people from the KM team, argue that the Central HI has little impact in facilitation. Also some hold the view that the KM team is not very useful: “My honest impression is the lawyers in this group at least probably wouldn't find them that useful…” (More in Appendix D.6).

For example, one of the main roles of the HI in the facilitation is having the knowledge holders share their knowledge by encouraging, reminding them, or providing incentives. The Central HI is not successful in this regard; for example, a lawyer says “I don’t see that they do [encourage or remind knowledge sharing]”. Generally experts are more motivated by the people from their divisions and especially by their superiors than KM team:

...because people always are very driven by the reputation with the seniors, so if it[encouragement or asking to share] is coming from up high rather than from KM ... sounds like more of a direction, so you’re more likely to comply.

Moreover, in spite of the Central HI’s involvement in facilitating knowledge contribution to the KMSs in the firm, lawyers contribute very little of their knowledge through them to KMSs: “I would not say that they really [have a role in
knowledge sharing], we don’t really share our knowledge through KM people rather they just give us stuff that we need”.

4. The distance of the Central HI from knowledge workers: The knowledge reuse and sharing facilitation is a type of function that mostly needs the HI to work closely with knowledge workers. The Central HI usually does not dedicate their services to a certain practice group and has insufficient resources to work closely with individuals. People may not know or directly receive their benefits or may use the Central HI just in case of trouble. The data show that the KM team is not influential or visible to knowledge workers and some people even do not know the KM team’s services well; the KM team is seen to have a “low profile”:

From my perspective the KM group now has a fairly low profile and most people don’t even think about them or hear from them or see them or anything (More in Appendix D.7).

Central HIs are inappropriate in directly intermediating knowledge sharing because they are not within the groups or close enough to the people, for example, to encourage or push people to contribute:

That is something very difficult for the KM team to be on top of, unless, often I think with lawyers they need pushing to put things into KDB (knowledge database) or keep the KDB up-to-date, they need to be pushed and need someone jumping on them say hey [laughing] we want that advice to go there ... that is something very difficult to do at [firm-wide] level by KM team.

5. Central HI is reactive or passive facilitator: Central HI as facilitator is a reactive or passive HI rather than proactive. It means that if the divisions or knowledge workers want they will help or facilitate the process but if they do not ask the Central HI may not proactively facilitate, which does not lead to successful knowledge reuse and sharing:

They [KM team] tend to be more reactive than proactive and than getting information to me so if I ask something they find it and that is useful but it is not very much stuff that I receive on solicitors, occasionally but not so much. (More in Appendix D.8).

6. Lack of specialized knowledge of Central HI and understanding context: In some cases to be able to facilitate knowledge reuse and sharing, the HI needs to have knowledge about the core business of users as well as the context of the group. Usually the Central HI lacks this knowledge and also lacks proper understanding of the context. For example, Central HIs do not know what type of knowledge is more important for the group; and in some cases in the context of a law firm, they are not legally qualified, for example, for updating the content of KMSs: “It is just very
difficult to them [KM team] to identify what is important to the team and what is not when they don’t work in it.’’

7. The Central HI is not a good facilitator of tacit knowledge exchange: In facilitating explicit knowledge sharing and reuse, IT is important and consequently the Central HIs have more roles. But facilitating tacit knowledge sharing usually involves providing socialization situations in which the experts meet each other such as in meetings, seminars or social events. The Central HI is not in an appropriate situation to play a role in these types of activities for individual divisions. Moreover, as another way of facilitating tacit knowledge sharing, the HI should be able to provide ‘yellow pages’ or a skill directory, or be a source of meta-knowledge such as ‘who knows what’. The users believe that the KM team members are less likely to facilitate this: ‘‘...no, they may but more than likely unlikely’’.

5.3.4. Need for Local HI: Special roles which can/should be done by Local HI

The previous section revealed that for many reasons, the Central HI is an inadequate intermediary for successful knowledge reuse and sharing. This section argues that because of that, and some other reasons which are explained in this section, in addition to the Central HI, there is a need for another type of HI in each unit: the Local HI. The research data, and from comments made by users and knowledge-holders, and also by people who are involved in the KM affairs, confirm the importance and usefulness of the Local HI. Moreover, there are significant roles in the process of facilitation which can be performed best only by a Local HI. In this section three reasons are given.

1. The important of divisions – different KM issues in different practice groups. One of the reasons that require a dedicated KM person in each group is the impact of the relatively unique context and the condition of each group regarding KM and the facilitation. Every practice group in a large law firm may have a different focus or matters in KM. For example, some units may use more precedent, some may focus more on cases or legislation, and some may need more industry knowledge:

    ... also [KM person should] get their [lawyers] feedback as to what they use know-how for, how they use it, that could be individually tailored for that group because know-how is not the same for every team and how they use it is not going to be same, it very much depends on sort of the area they practice one team could be highly precedent based one team can use legislation lot, one team can use contracts a lot, you know very different.

Furthermore, in organizations such as a law firm, laws and regulations may vary by state or country, which makes for different modes of business and KM activities of a large multi-unit organization:
... because real estate law is different in every state, and so it is not necessarily relevant one state to the next.

...well the divisions don't work quite the same way I think that because there are many more of them and because the work they do is often jurisdictionally specific I think that they cannot move sometimes between states it is very easy for them to branch off and not communicate with different states.

Moreover, the managers or staff of the groups may prefer different methods of KM or KMSs in terms of facilitating knowledge reuse and sharing. For example, in some groups a certain number of contributions may be mandatory for everyone, or in some groups people may be required to get approval from partners before contributing. For example:

I think that it is [application of the KMSs in the firm] very much depends on the divisions, so in some divisions is mandatory to contribute and some is not, so that's a factor. [In some divisions it is mandatory] they have a minimum number to contribute.

Well it seems [contributing procedures] happen differently in each of the regional offices, so X, Y and Z all have slightly different methods how they do that.

So the divisions are the main determinants of ways of facilitating knowledge reuse and sharing. Moreover, the divisions also are the main determinants of success of KM facilitation; because even if the Central HIs do their best but are not accepted by practice groups, then they would not be effective:

It [KM team] is quite passive, I think there are many attempts to be more active but for whatever reason there is suggestion and always taken up by the division, so it is very hard to get in there to be actually be able to push forward an idea through (to) division, it has to come from the divisions itself is something that is going to work.

The data show that the KM team also realizes the importance of a division in KM and wants divisions to take the ownership of KMSs, for example. There are many examples in the firm in which some divisions are very good in KM affairs such as updating the contents and keeping the KMSs active, but some are not. Practice groups are mainly responsible for maintenance of the KMSs, so this can be done by in Local HI:

... because you want the divisions take the ownership of the content [of KMSs] even if we know something like that we might make recommendations to them ask them to make a decision about the content but we wouldn't just make the decision I think, we would facilitate it.
2. **Local HI is more effective HI.** Despite acknowledging the importance of the Central HI’s services, many of the interviewees, especially lawyers, indicated their preference for the Local HI in comparison with the Central HI. Some lawyers indicated their interest and favour of having a dedicated person inside the group with phrases such as “that would be perfect”, “it is a great idea”, “that would make a big difference” and “they are right on the spot”, to have “wonderful legal expertise” and so on.

This is because Local HIs have unique characteristics including:

- having specialized knowledge of the group
- situating within and belonging to the group
- understanding and being better aware of the context, the KM affairs, the knowledge needs and the business of the group
- being familiar with the knowledge workers and their expertise and working closely with them on a daily basis
- having more opportunities to facilitate knowledge sharing and reuse

Those groups which do not have, for example, a full-time Local HI, demand and show their interest in having one. Moreover, many of them argued that to improve knowledge sharing and reuse, there is a need for a Local HI type, for example:

It needs to be someone who does that full time and dedicated to that role but ideally it should also be someone who is part of the team.

I think sometimes people in the division have thought that, have believed in the value of knowledge sharing so they use a KM lawyer because they decided they want wonderful legal expertise so the separate ....

Participants in the study would like the firm to invest in and pay more attention to Local HIs. More ideas given by the interviewees that indicate the importance and effectiveness of the Local HI as well as the need for this type of intermediary are presented in Appendix D.9.

3- **Specific roles that can be done best by a Local HI:** There are some important and vital roles for facilitating knowledge sharing and reuse which can be best performed by the Local HIs due to their unique characteristics. As one of the lawyers said, the KM people have difficulty in effectiveness and performing some roles because they do not fit in the groups rather they sit in a library or a physical place away from the group. Even the people from KM team have same idea:

I think that they [KM lawyers] have probably a closer awareness of the kind of work that they have been done so they are in very good opportunity to be able to pinpoint when the information flow we can put out that knowledge it is going to be best use for reuse.
The main reasons why the Local HI can best perform some facilitation roles are in the unique characteristics that mentioned before. Table 5.1 indicates some of the functions that interviewees explained and argued can be done best by Local HIs. These roles are mostly detailed knowledge-oriented roles which are more important than other technology-oriented HI roles. In the next chapter, we categorize and explain them. Evidence from interviews in this respect is presented in Appendix D.10.

**Table 5.1. List of the roles perform best by the Local HI**

<table>
<thead>
<tr>
<th>Role Description</th>
</tr>
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<tbody>
<tr>
<td>Encouraging and pushing knowledge workers into sharing their knowledge generally and specifically to contribute to KMSs.</td>
</tr>
<tr>
<td>Facilitating tacit knowledge sharing: as the source of who knows what, and as who initiate, organize and run learning and knowledge sharing seminars and meetings; and other activities such as composing working teams in group, collecting the work history of the experts, and ....</td>
</tr>
<tr>
<td>Facilitating knowledge creation (e.g. initiating and running precedent development and process improvement meetings).</td>
</tr>
<tr>
<td>Improving knowledge reuse, and sharing (contribution) processes.</td>
</tr>
<tr>
<td>Collecting the contributions of the knowledge workers, and/or helping them in preparing and uploading the documents to the KMSs.</td>
</tr>
<tr>
<td>Understanding the group needs and the personalities of people; and participating in the group meetings and promote the knowledge sharing and reuse.</td>
</tr>
<tr>
<td>Knowledge work on KMSs such as keeping the contents updated, categorizing, sorting and filtering, summarizing the contents, improving quality of the content, adding metadata to the knowledge in the KMSs and helping others to do so.</td>
</tr>
<tr>
<td>Promoting KM in the group and informing the users about the KM procedures.</td>
</tr>
<tr>
<td>Coordinating the facilitation functions with other parties such as: initiating and coordinating incentive plans for knowledge sharing and reuse; persuading top managers to support the KM activities; and requesting KMSs and IT tools from Central HI and improvement of them.</td>
</tr>
<tr>
<td>Demonstrating good examples of knowledge sharing and reuse; playing a role model in knowledge sharing and reuse; giving presentation in learning seminars; and developing specialized knowledge understanding of people.</td>
</tr>
<tr>
<td>Demonstrating the benefits of knowledge sharing and reuse.</td>
</tr>
</tbody>
</table>

As a conclusion, for successful knowledge reuse and sharing in the knowledge-intensive multi-unit law firm studied, two types of HIs are required. Table 5.2 summarizes these categories and justifications.
Table 5.2. Categorization and justification of two types of HIs

<table>
<thead>
<tr>
<th></th>
<th>Central HI</th>
<th>Local HI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope of intermediation</strong></td>
<td>- firm-wide – all units</td>
<td>- specific unit</td>
</tr>
<tr>
<td><strong>Perspective</strong></td>
<td>- general or firm-wide</td>
<td>- unit/context-specific</td>
</tr>
<tr>
<td><strong>Unique functions</strong></td>
<td>- providing IT and KMSs</td>
<td>- facilitating tacit knowledge sharing and reuse</td>
</tr>
<tr>
<td></td>
<td>- central management of KMSs and tools technically</td>
<td>- running KMSs and tools in terms of contents, and knowledge work on KMSs</td>
</tr>
<tr>
<td></td>
<td>- supporting users technically</td>
<td>(such as quality control, adding metadata, updating and...)</td>
</tr>
<tr>
<td></td>
<td>- providing knowledge sources such as library activities,</td>
<td>- can perform best many of the knowledge-oriented functions</td>
</tr>
<tr>
<td></td>
<td>- transfer best practices to other groups</td>
<td>(functions listed in Table 5.2)</td>
</tr>
<tr>
<td><strong>Unique characteristics</strong></td>
<td>- ability and expertise in IT</td>
<td>- having specialized knowledge of the group, (they are practitioners)</td>
</tr>
<tr>
<td>(or qualification)</td>
<td>- ability and expertise in KM</td>
<td>- situating within and belong to the group</td>
</tr>
<tr>
<td></td>
<td>- ability and expertise in library</td>
<td>- understanding better the context, the KM affairs, the knowledge needs</td>
</tr>
<tr>
<td></td>
<td>- ability and expertise in other areas such as communication, and</td>
<td>and the business of the group,</td>
</tr>
<tr>
<td></td>
<td>multimedia</td>
<td>- knowing the knowledge workers and their expertise better and</td>
</tr>
<tr>
<td></td>
<td>- provide IT and KM service</td>
<td>work closely with them everyday</td>
</tr>
<tr>
<td></td>
<td>firm-wide and has large scale efficiency</td>
<td>- having more opportunities for facilitation</td>
</tr>
<tr>
<td></td>
<td>- can perform best many of the Technology-oriented functions</td>
<td></td>
</tr>
<tr>
<td><strong>Reasons of need</strong></td>
<td>- existence in the case</td>
<td>- existence in the case</td>
</tr>
<tr>
<td>for them</td>
<td>- unique characteristics of them</td>
<td>- unique characteristics of them</td>
</tr>
<tr>
<td></td>
<td>- some roles (technology – oriented) can best be done by this type of HI</td>
<td>- some roles (knowledge-oriented) can best be done by this type of HI</td>
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<tr>
<td></td>
<td></td>
<td>- insufficiency of Central HI in performing some facilitation roles</td>
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<td></td>
<td></td>
<td>- units with Local HI are more successful in knowledge reuse and sharing</td>
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5.3.5. Need for both types of Human Intermediaries

There may be a question about why there should be two types of HI and why they are not integrated into one group. But the data show that both of them are necessary, useful, and have different roles, expertise, situation, and somehow unique opportunities which complement successful facilitation. As mentioned, for example, in the case the Central HI people are assigned to manage library resources and technically support KMSs and KM infrastructure in general, while the Local HI are involved in more daily and detailed facilitation in each group.
Moreover, most of the interviewees, especially lawyers and KM lawyers, argued that the combination of these two intermediaries is necessary and effective, because, for example, it is more efficient to manage firm-wide KM and IT infrastructure as well as library and precedent resources. There also is a need for complementary activities in the groups for the Local HI. Therefore, both types are required but there should be collaboration and coordination, otherwise there will be deficiencies in knowledge intermediation:

I don’t think the integration [of KM lawyer with KM team] will assist, integration is not good idea, what need to happen [is] they need to work a lot closer and they need to collaborate a lot more. I don’t think the integration would help but I think greater level of collaboration would certainly improve (More in Appendix D.11).

5.4. Considerations about the Typology

In this section some of the issues relevant to this typology will be discussed, because except for the need of a dedicated person as a HI, other related matters and forms of HIs depend on many factors and can be challenged. All of the interviewees do not share exactly the same view about HI. For example, although many interviewees argued that there should be both Local and Central HI, a lawyer believes there is no right option: “I don’t think there is a right way; I think if you have one central person, who needs to be given enough time to be able to do the job...”.

This section addresses some considerations such as affordability or possibility of employing Local HIs and alternatives and proper relationship of these two types of HIs.

1. Affordability and possibility of employing Local HI and alternatives

Investment in KM is not just implementing IT-based KMSs. Actually employing and dedicating a HI in each practice group is one of the most appropriate investments in the large knowledge-intensive law firm studied. Some of the interviewees explicitly confirmed this and argued that technology is not the solution.

However, employing and designating a full-time expert such as a lawyer for KM in each group is not always affordable or economic nor easily achieved, especially for small units or groups where KM initiatives need little facilitation; because, firms usually employ lawyers to work on profit-earning client matters.

Would be good if they see the way in putting people like me [KM lawyer] into some of the other offices for instance, that would really speed thing up, I suppose that they don’t want to spend that kind of money.
Moreover, lawyers usually may not be interested in doing the KM facilitations roles. According to the case study data, other alternatives can be considered in these situations due to the importance of a Local HI. One alternative is to assign an expert as the Local HI for facilitation roles, not full-time, but giving a fraction of his or her time. Usually this person should be someone who is interested in KM and also has positive ideas with a demonstrated record on knowledge sharing. Another alternative is assigning experts to the role of Local HIs on a temporary basis by turns or shifts; for example, on a fortnightly basis. The third option is to have a committee of experts to perform Local HI roles with regular meetings and splitting up the tasks among them. Each option has its own advantages and disadvantages depending on the groups’ KM needs and affairs; any one of them can be useful. In the case studied here, all forms of the alternatives in addition to the full-time Local HIs were evident in different situations (see Appendix D.12).

There is another option for HI in a large multi-unit organization in which the organization just has one type of HI, namely a Central HI or KM department but possibly with two groups of employees, the first group working for the whole firm, while the second group with members dedicated to every division. One young lawyer, however, expressed the view that due to the lack of interest among lawyers for Local HI roles, the group can have an allocated person from a KM team in their group:

They [Local HIs] should belong to the [KM] team but be posted into our teams because you cannot really ask a lawyer to do [KM] solely because they are paid to be a lawyer, and people are not going to go for that role (More in Appendix D.13).

Although this type of HI was suggested by a few interviewees, it was also the case in a few divisions in the firm historically; it is not a perfect option. The case study generally showed that each group that wants to better manage its knowledge resources assigns a Local HI. Furthermore, the KM team members in divisions do not have all the characteristics and conditions conducive to performing as a Local HI. For instance, they have not the specialized knowledge of the divisions. Moreover, they may not be influential due to differences between them and the experts in terms of level, language and business. However, as some of the interviewees believe, this form is better than just having a Central HI, at least because the HI in this situation is close to the knowledge workers and can understand better the context of the group. For example, one of the librarians from KM team says:

I can only speak from previous experience; it seems to work whatever was one person who was worked with a practice team within the KM group ... so that person had responsibility for particular areas.

Another option is employing business experts within the KM team. Although the KM team can employ some practitioner such as a lawyer, as was the case in the firm, due
to many different practices in different areas, it is not possible to employ a costly lawyer for every group. In addition, there remain problems such as distance from users and lack of contextual understanding. This alternative can probably be considered for non-knowledge-intensive types of organizations. One of the interviewees suggested another alternative in this respect: to have a dedicated HI in the group who belongs to both a special practice group and to the main KM team; a form of structure in which the Local HI have two supervisors. This has its own advantages and disadvantages and may suit for some particular situations; “a better structure is to have a KM person within the division so have that belong to the division but also who belongs to wider firm-wide community of KM professional.”

2. Qualification and conditions Local HI

The Local HI should have some qualifications such as experience in practicing the core business of the group, communication skills, KM knowledge and skills, and general IT skills. But sometimes, according to the data, special people become interested or suit this job – as examples, someone who has interest in KM work, someone who does not like to work anymore in the core business, someone who wants to work on a part-time basis, someone who has special knowledge about the field, someone who has work experience in different environments, and so on. To be effective, however, the Local HIs should learn the needed skills:

…it is probably convenient role some people wanted to do instead of practicing as a lawyer, so there is opportunity and for example, sometimes people want to go part time and they see that as a sort of role they can maybe do on a part time bases so it is just about, you know, staff flexibility.

Local HIs can be different in terms of their roles, position and so on because of their particular qualifications and conditions. They may not perform all the facilitation activities, rather they perform some of them based on the group’s needs, or their time and interest.

3. Other facilitators

On another viewpoint, almost everybody in the firm including secretaries in groups, lawyers themselves, and partners or managers can and should be an intermediary and facilitator of knowledge sharing and reuse. Although a Central HI is very important in facilitation, the role of head of the groups and partners should not be ignored.

Again we [KM lawyers] can have some impact; but it is not high, we can try to persuade and push people and I think the reality is unless there is a culture of sharing and contributing which is promoted by the partners and the managers, then it does not happen.

My [KM lawyer] role depends very much on support from the partners.
For example, in the firm, partners play important indirect intermediary roles in encouraging staff for knowledge reuse and sharing. Users believe that their encouragement is more influential than a Central HI and some believe partners should get lawyers to contribute their knowledge (see Appendix D.14). However, these issues are not the focus of this study.

4. Relationship of two types of HI

Because both types of HIs are intermediaries of productive knowledge flow, their relationship is one of the main issues to be considered in successful knowledge sharing and reuse. Sometimes their roles may overlap, so, there is a threat of conflict or ambiguity of responsibility. Because both types of HIs have a goal of facilitating knowledge reuse and sharing, they should collaborate and coordinate their functions. Otherwise there is a risk of, for instance, having two different approaches or ways in the facilitation process:

I think the danger with having whole a lot of individual lawyers in individual teams is that there is no coordinated approach and does need to be coordinated approach. So I think it would be better to have a central team ... it would be better having a central one had their own centralized systems and way of doing things .... So you get the benefit of both detail but a coordinated approach to it.

Actually, improvement of the facilitation process also depends mostly on this collaboration and coordination because it creates synergy: “I think [KM lawyers can improve knowledge sharing and reuse] ... by developing more collaborative relationships with the [KM] division”.

In addition, they need to coordinate their approaches to have consistency in KM. Also they need each other’s assistance to accomplish their functions (see Appendix D.15). Moreover, the Local HI can be a link or bridge to connect the users’ and divisions’ needs to Central HI and their services. Due to the Local HI position in the groups, they can be a gateway for better communication of parties in the facilitation:

People like me [Local HI], we are the visible ones and people come to me about all the issues and then I apply the sort of a gateway, I suppose, if it is not something that falls in my areas then I refer them to the appropriate person in KM group they can help them or to IT, someway I think I fulfill a kind of conjoined role and helping the two sides to talk to each other because they don’t think share much language together, but you need both .... I mean together work quite well, you do need both.

Here the Central HI role is important; it is a channel that connects all Local HIs and their services in the firm. The Local HI can understand through Central HI, for example, via firm-wide shared meetings between Central HI and Local HIs, what is happening in other groups and exchange best practices in KM as well. In the case of
the study, it seems that the relationship between these two types is not ideal, maybe because the Local HI are somehow new and unappreciated initiatives in the firm, or their importance and collaboration not yet well realized. This can be understood from the perceptions they have about each other (see Appendix D.15 about their relationships).

The Central HI should know who the Local HI are in the units because probably the best way to communicate with the groups and the users is through them. They should collaborate and coordinate their activities by some mechanism such as a periodic and frequent communications and meetings between them. Even friendly and informal relationships mentioned by some interviewees could prove helpful. Also the Central HI should participate in some group meetings of divisions as well; as mentioned by one of the informants, they should make a community: “I think they [KM team and KM lawyers] should form a part of the committee, definitely”.

5.5. Discussion

In this section, the findings of the study explained in this chapter are discussed in the context of the literature. The findings regarding other parts of the study will be discussed in chapter eight.

Based on the analysis of the collected data such as interviews and documents, two types of HI for successful knowledge reuse and sharing in the knowledge-intensive multi-unit law firm studied are identified. One type is firm-wide or Central HI that usually compose the KM department of the firm. The other is Internal or Local HI who are practitioners within the groups. The first type of HI is not new; their importance has been studied before. But identifying and justifying the Local HI is the contribution of this present research. Thus, results from this part of the study suggest that to have successful knowledge reuse and sharing in the knowledge-intensive multi-unit law firm studied, it is necessary to have facilitation functions performed by both Central and Local HI are.

In the initial research framework of the study, two other types of HI were identified based on the role that they play. The data confirm this categorization and the next chapter focuses on this point. However, two distinct and important types of HI are identified in the case of the study; it is our view that differentiating and appreciating them is necessary for successful knowledge reuse and sharing. This typology is based on the location or position and divides the HI based on the span of knowledge intermediation, on whether it is for the whole organization (Firm-wide or Central HI), or a specific division within the organization (Internal or Local HI).

Markus (2001) in the initial theory of knowledge reusability introduced two types of intermediaries, namely technology and human; but did not go further to elaborate on HI. Nor did she consider the type of organization factor in facilitating knowledge
reuse; while according to Nonaka and Takeuchi, (1995) KM and knowledge creation have implication for both organizational management and structure. So our categorization of HI in this chapter revealed the link between KM and specifically facilitating knowledge reuse and sharing and the organizational management and structure.

In the literature some studies investigated the impact of IT on organizational designs. For example, Nault (1998) has considered three types of designs based on the location of IT-relevant decision rights: a hierarchy (all decisions are made by a central authority), a market (all decisions are made by the decentralized units), and a mixed mode (global decisions are made by a central authority and local decisions are made by decentralized units). Organizational design in terms of KM decisions and the facilitation based on our categorization of HIs is similar to the third design in which the two types of HIs complement each other. Local HIs facilitate local affair of knowledge reuse and sharing and Central HI facilitate globally.

In identifying HIs we have considered the situation, condition and location of HI in groups and networks; similarly Aalbers et al. (2004) found them significant regarding intermediaries. They pointed out the important concept in knowledge intermediary and mentioned that not every actor can fulfill this role because brokers should have appropriate network positions to access a variety of knowledge sources. Our definition and justification of both types of HI is according to their situations and conditions in the organization or in their units.

The Local HI in this study is similar to Burt’s (1999) opinion leaders or opinion “brokers” within and between groups who transmit information across social boundaries. The Local HI can and should be opinion brokers to connect (bridge) individuals together who would otherwise be disconnected in a network. Moreover, Burt (1999) maintained that opinion brokers “are not people at the top of the things so much as people at the edge of things” (p. 51). Consequently, they do not necessarily have superior authority or special attraction, but they are identified by functions and structural location. Similarly the Local HI is not the person in the group with the high expertise, but have fair amount of broader knowledge about all the work and events that are happening in the group and even in the whole firm. For example, they should know what sort of knowledge his/her group members need. Also the Local HIs are valued in the group not because of the authority that he or she has but because he/she is located in a better position for intermediation of knowledge and has special roles that make him or her superior.

However, Burt (1999) argued that opinion brokers are “not leaders within the group so much as brokers between the groups” (p. 51), while the Local HI is the intermediary both within and between the groups. Mainly the Local HI is the intermediary within the groups. The Central HI is the intermediary between the groups. Finally, the HI especially the Local HI, like opinion brokers, has “strong
relationships between weakly equivalent people" (p. 51). For example, they connect
different knowledge workers who are not working in the same areas.

In previous studies the term HI is not much used, but, some of the close concepts to
HI or human agents in the literature are chief knowledge officers (CKOs) or
knowledge champions. For example, Jones et al. (2003) argued that human agents
such as CKOs or knowledge champions play the role of change agents, innovators,
and opinion leaders to facilitate the acquisition and use of knowledge in firms by
effectively using organizational memory systems. Local HIs can be knowledge
champions depending on the groups' conditions; although it seems that probably
these people are mostly or commonly suited to organizations other than large multi-
unit knowledge-intensive firms – such as small or non-knowledge-intensive
organizations.

Our findings regarding the qualifications of HIs are, to some extent, consistent with
Jones et al. (2003), but show differences as well. According to Jones et al. (2003), a
CKO needs to have technical, human, and financial skills, as well as knowledge
about processes in the business to accomplish his/her responsibilities. Our findings
confirm this and emphasize HIs with specialized knowledge and skills in IT, KM and
communications. However, in a large multi-unit law firm, it is not possible to have a
person with such a broad spectrum of skills and characteristics all at once, so
different intermediary roles may appropriately be done by different people, as we
generally divide HI into different types in terms of roles and position.

This study is consistent with the finding of Roth (2003) who argued that by allowing
the emergence of knowledge facilitators, practical knowledge for action is produced
and shared. However, Roth mostly focuses on knowledge creation, while this study
focuses on knowledge reuse and sharing.

Roth's (2003) notion of "knowledge facilitators" is mostly in accordance with the
Local HI for each practice groups, because the roles that he assigned for them are the
ones that we found in this study can be done well by Local HI such as facilitating
knowledge creation (e.g. precedent drafting in this study), and promote trust and
sharing culture. Moreover, Roth (2003) maintained that knowledge facilitators are
necessary for establishing the right enabling context. This task of HI is found very
important in this study which can be done best by Local HI.

Another area that our study is comparable with Roth (2003) is in the qualification of
facilitator. He believed that the knowledge facilitator is not the major carrier of
knowledge; he or she functions as a facilitator of the action. This is to most extent
true according to findings in this study, especially relevant to Central HI, but Local
HIs in some cases are carriers of at least general knowledge as well, and actually this
characteristic make their intermediation better and more useful.
5.6. Summary

HIs play vital roles in facilitating knowledge reuse and sharing. They facilitate the knowledge flow from sources to users. This chapter focused on the location-oriented typology and described and justified this typology. The data from our case study indicate that two groups of HIs perform the facilitation and mediation roles: staff from the KM department or Central HIs, and those from the practice groups or Local HIs. Both kinds of HIs have different and necessary roles and characteristics; Central HIs have skills and knowledge in KM and IT and also are primarily running the organizational KMSs. Moreover, this group is able to have a large and broader view of the organization and its different units. They are in a position and location to manage collaborative knowledge of the organization.

On the other hand, because the Central HI is lacking in the specific knowledge about the practice groups’ activities and do not closely work with knowledge workers, there is a need for a group of facilitators inside the different practice groups of the organization to play partly the intermediation and facilitation roles. The existence of both kinds of HIs in the case was evident, and data confirmed a need for both. Many reasons and evidence from the case study were offered and explained to indicate a need for both types of HIs and it was demonstrated that each of them alone are not able to successfully facilitate knowledge sharing and reuse. Also these two HIs would achieve better results by working closely with each other and coordinate the facilitation to increase synergy and consistency. Some other issues relevant to this typology were discussed.
HUMAN INTERMEDIARIES ROLES AND FUNCTIONS (THE ROLE-ORIENTED TYPOLOGY)

6.1. Introduction

This chapter addresses the second research question:

2- How can Human Intermediaries improve more and better knowledge reuse and sharing? (What roles and functions should they perform for successful knowledge reuse and sharing?)

This chapter identifies and presents roles and functions that are necessary to be performed by HIs for successful knowledge sharing and reuse. Two primary roles are identified: technology-oriented and knowledge-oriented HI roles. These two role types were identified in the initial framework, but are elaborated here.

Each role type, either technology-oriented or knowledge-oriented is associated with a set of functions particular to the role. There is also some discussion of which HI type, Local and Central, can and should perform each function.

Many of the functions presented in this study are not new; the contribution here is to provide a comprehensive list of functions that emerged from the case study, and justifying which is necessary for successful knowledge reuse and sharing. Moreover, differentiating knowledge-oriented functions from technology-oriented functions and assigning appropriate HI for each of them is another contribution of this study.

These lists of functions were developed inductively by analyzing the case study data (interviews and documentations) based on one or combination of these logics: the problems of knowledge reuse and sharing which require the HI's function, the performance of the function by HI (which participants confirm them useful), and the requirements for better facilitation of knowledge sharing and reuse. Chapter three, section 3.9.2, explained this process in detail and indicated how the functions were
derived from the data. These functions will be compared with the list of functions developed from the literature review in the discussion section of this chapter.

This chapter is organized as follows: Section 6.2 lists and explains knowledge-oriented functions. Section 6.3 lists and describes the technology-oriented functions. The chapter concludes in Section 6.4 by briefly relating this classification and functions to prior literature. Also this section discusses that the categorization of HI's role to knowledge-oriented and technology-oriented roles can be regarded as types of HIs that were discussed in chapter two. The overall significance will be discussed in chapter eight.

6.2. The Knowledge-oriented Human Intermediary Role

This section identifies and explains the list of the knowledge-oriented roles to be performed by HIs for successful knowledge reuse and sharing. The main similarity of these functions, which separate them from technology-oriented roles, is that they are non-IT facilitation roles, although IT may be involved in performing them. It is usual to first explain the reasons for the function, and then the function and appropriate HI for that function to be identified and described. Those functions that are studied more in the literature are described very briefly but others that the researcher thinks are more informative or important are described in greater detail. These roles are categorized into five main functions which themselves are divided into sub-functions (see Table 6.1)

<table>
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<th>List of the functions</th>
<th>Appropriate HI</th>
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<td>1. Encouraging knowledge sharing and promoting its culture</td>
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<tr>
<td>1.1 Increasing awareness, and reminding users of the value of knowledge-sharing and reuse</td>
<td>Local, Central</td>
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<td>1.2 Promoting and reminding about knowledge sharing and reuse</td>
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</tr>
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<td>1.3 Fostering the culture of KM and knowledge sharing</td>
<td>Central &amp; Local</td>
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<td>1.7 Facilitating creation of appropriate working environment for KM activities</td>
<td>Local &amp; Central</td>
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<tr>
<td>2. Providing tacit and direct knowledge sharing facilities and settings</td>
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<tr>
<td>2.1 Organizing learning seminars or team meetings</td>
<td>Local</td>
</tr>
<tr>
<td>2.2 Providing network facility and “yellow page” directory to connect experts</td>
<td>Central &amp; Local</td>
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6.2.1. Encouraging knowledge sharing and promoting its culture

One of the very early steps in facilitating knowledge sharing and reuse is to prompt knowledge sharing and create it as an organizational culture, which is a main issue in knowledge-intensive organizations. It is thus very important to get experts to share their knowledge in the firm. The data show that one of the main problems in KM is the lack of willingness by the knowledge holder to share; in the following sections some of the reasons and the ways to handle them through knowledge-oriented HI roles are explained and discussed.

(1) *Increasing awareness and reminding users of the value of knowledge sharing and reuse*

*Problem: lack of understanding the value of knowledge sharing.* One of the important reasons of not sharing knowledge is that knowledge holders do not know the real value of knowledge sharing for their own and the firm’s performance. Because usually experts are busy with daily business activities, they generally ignore or do not realize the importance of knowledge sharing. If they knew the value of knowledge sharing, they tended to share more. This is evident in the case study:

| 2.3 Initiating and facilitating social events | Local & Central |
| 2.4 Facilitating knowledge generation | Local & Central |
| **3. Facilitating explicit knowledge reuse flow** | |
| 3.1 Introducing sources of knowledge outside and inside of the firm | Local & Central |
| 3.2 Capturing and collecting knowledge | Central & Local |
| 3.3 Helping knowledge holders to contribute | Local & Central |
| 3.4 Distributing knowledge | Central & Local |
| 3.5 Researching and providing knowledge for users individually | Central & Local |
| 3.6 Performing library and subscription works | Central & Local |
| **4. Performing knowledge work on KMSs: Improving the usability and usefulness** | |
| 4.1 Improving knowledge presentation in KMSs | Central & Local |
| 4.2 Ensuring the quality of knowledge in KMSs | Local |
| 4.3 Adding metadata | Local |
| 4.4 Update the contents of KMSs | Local & Central |
| **5. Coordinate the intermediation roles (generally KM)** | |
| 5.1 Taking the responsibility of running KM and KMSs | Central & Local |
| 5.2 Encouraging and transferring best method of knowledge reuse and sharing | Central & Local |
| 5.3 Coordinating and collaborating the intermediation with all parties | Central |
"relatively the higher positioned staff share more, because they realize the value of sharing". So, as data show (see Appendix E.1) the problem is that knowledge sharing is not valued in the organization as it should be. Also people do not:

- know the value of knowledge sharing;
- consider knowledge sharing high value;
- think about knowledge sharing; and
- are not aware of knowledge sharing.

For example, an interviewee said: "...I think it is more about the value has not been properly demonstrated to them"; or the other one similarly said: "I think sometimes people underestimate the value of that knowledge, they think that is not worth sharing but in fact that can be quite relevant" (More in Appendix E.2.).

**Demonstrating the value of knowledge sharing.** To address this problem, HIs should take every opportunity to make the staff realize the benefits of knowledge sharing and reuse by demonstrating the value of knowledge sharing in the firm by:

- Educating users and increasing the awareness about the value of knowledge sharing and reuse in seminars or meetings.
- Demonstrating real examples in which the knowledge sharing and reuse lead to saving time and money and improving the performance of the firm as well as avoiding the "reinventing of the wheel".
- Increasing awareness and demonstrating the value of knowledge sharing frequently, as there is generally high turnover of staff in organizations.

This function is considered by many of the interviewees as an important role of HIs in order to improve knowledge reuse and sharing (see Appendix E.3). One of the lawyers interviewed says they can do so by "demonstrating good examples demonstrating time when it is been helpful and achieved the better result".

**Appropriate HI.** This role can be mainly performed by the Local HI, because this function needs intermediaries with characteristics of a Local HI who works closely with the staff in doing the group’s business or having experience or specialized knowledge in the area. Because the Local HI understands the problem well in its local context, and can come up with examples, he/she is able to prove the value of knowledge sharing and reuse. Thus for a multi-unit organization, the Local HI is the appropriate knowledge intermediary for this role. However, the Central HI sometimes can be effective in this function especially on the universal firm level by transferring success stories relevant to knowledge sharing from one group to other.
(2) Promoting and reminding about knowledge sharing and reuse

Problem: forget or ignore sharing (and reuse) knowledge. Sometimes the reason for not sharing is not lack of awareness of the value of knowledge sharing or reuse but because usually experts are very busy and may forget or ignore sharing knowledge. For example, they may finish a project in which they can transfer to others valuable lessons learned, but they may forget because of time pressure to start another one. Also sometimes even they forget about knowledge reuse or do not know that there are KMSs in the organization that they can use to improve their performance. For example, one the participant believes: “I think some people do not share because they are time poor, [and] I think it is not foremost in their mind” (More in Appendix E.4).

Constant reminding of sharing knowledge (and reuse). To deal with this problem according to data, there is a need for HI to constantly remind staff and encourage them to contribute. This can be done by contacting them informally or asking them in seminars, meetings or even asking their supervisors to remind them. HIs also should monitor the knowledge generation situation such as important projects in which there is potential learning for others and then ask them to share their knowledge (see Appendix E.5). For example, a lawyer describes this function:

...say hi, John, you just have been working on this project I think other people would like to hear about it, I think other people could learn from your experience, the senior manager or KM person can actually play that role that is useful too.

Appropriate HI. To perform this function, similar to the previous function, HI with Local HI characteristics is appropriate, because the HI needs to be in the division, have many and close contacts and relationships with staff, be familiar with the knowledge areas in the division and staff involved with knowledge production and reuse. Although in the case study, sometimes due to lack of Local HI in some divisions, the Central HI also performs this role occasionally.

(3) Fostering a culture of KM and knowledge sharing

One of the main obstacles especially in knowledge sharing in organizations is the cultural setting and issues. Probably the most important knowledge-oriented HI role is to address and overcome these problems. In this section, some of the cultural issues that data reveal are first discussed then the methods of dealing with them by HI are explained.

Cultural Problems. There are many cultural problems such as the “knowledge is power” perception, fear of criticism and lack of confidence. The first issue that hinders knowledge sharing is that the experts may feel that their knowledge is their
own privilege and provides a weapon against competition inside and outside of the organization. They may feel that sharing knowledge may reduce their power, especially in a law firm where lawyers typically work individually and accumulate a fair amount of knowledge over many years. In this situation it is hard for them to see the whole organization and realize that their knowledge is also organizational intellectual property. Sometimes the knowledge holders unconsciously try to withhold their knowledge to feel empowered, protected, and qualified for more promotion. Many of the interviewees confirmed these points. For example, a lawyer said: “Lawyers are typically competitive and guarded with their information” (more comments in Appendix E.6).

Fear of criticism. People may not share their knowledge if they feel that others are going to criticize them and question their credibility. If the climate in the organization is one in which learning, including learning from mistakes, is not appreciated, the willingness of people to share their knowledge will be decreased. For example, in the case, lawyers are happy to communicate verbally and share information, but they are less willing to contribute tangible documentation, because they may look foolish or be criticized: “Some people are in doubt to share their documents to anyone else because they are afraid that their colleagues will pick holes in them and criticize them” (More in Appendix E.7).

Another problem is the lack of confidence of staff in themselves or in the value of the knowledge they gained. This is more common among younger practitioners even when they have good knowledge to share. They tend to share knowledge verbally, without formal documentation to contribute to KMSs:

People [do not share because they] are worried about confidentiality. People also [are] not confident in their own skills so I don’t think [this] is very good I don’t want to go up there ...(More in Appendix E.8).

The data show that many of the problems in knowledge sharing relate to cultural issues as discussed above, but it is not possible to cover all of them here. For example, free-riding, lack of habit to share or contribute after finishing each worthwhile achievement, and so on:

... so it [sharing knowledge] is not for most of them on the automatic part of how they think.... I have never seen an email [that] says ‘Hey we just finished this case and this is the argument we found I am attaching to my submissions’, but I do see in that they have regular systems in place, cycle of meetings [in] which ...to discuss. We have prompted people to think about them, whether to put things into databases or whatever it is, so we are sort of [making] an attempt to ... develop a culture around ... a set of habits but I don't see it happening spontaneously .... [So people do not share because they] are busy, and people have got bad habits.
It is clear that the HI should try to encourage, push and promote to the idea and practice of sharing useful individual information, but this is difficult without culture in which people openly share their own knowledge.

*Cultural change.* The HI should devise a comprehensive plan with diverse methods to address the cultural problem. Certainly to change the culture many stakeholders, including practitioners and top managers, need to be involved; this can happen gradually. Some of the solutions which require performance of HI according to the data are as follows:

*Appreciating and promoting good attitudes and knowledge sharers.* The data show that, there are some people in the organization who share knowledge well and believe that power is not in withholding knowledge but not all; the firm’s HI should encourage others to be like them and give them recognition for sharing (see Appendix E.9). Such recognition, for example, may be by making them team leader or 'knowledge champion'.

It depends still on the individual... there are some who ...are better at it than others ... I see around the practice group who are best at it are the people who [have] team leader responsibilities, so whether being a team leader [they are] told them to do or whether they are good team leaders because they naturally do it I don't know, but they are people who actually do it better than others.

Also generally recognizing people who share knowledge and paying attention to them and appreciating their contribution is very good incentive (as mentioned by interviewees), and such activities help to create a knowledge sharing climate in the organization.

*Developing and promoting knowledge sharing habits and making it the business of all.* Another attempt can be developing a culture or a set of habits in which, after finishing tasks, people automatically think about the learning aspect and share the gained knowledge as the next required step:

I really think it is absolutely critical to KM in the law firm ...of trying to get it done here is dealing with the people who don't take the next step of contributing their knowledge to the central information source, ..., developing a culture or a set of habits in which people would do this is the biggest challenge because there are people who just don't do it.

Creating a culture in which people feel that everybody is sharing knowledge and has responsibility to share, that if they do not, some one else will, as one lawyer argued, is counter to the idea that hoarding knowledge is power; rather, to hoard is not good and workable because "If one not give, you get from another". Another lawyer says: "... but really comes down to each and every one of us being responsible and [appreciate] the importance of sharing information".
Promoting the culture of reciprocity and trust. The HI should promote the idea and practice of knowledge sharing that lead to the benefit of all. Reciprocity is a good motivation which should be part of the organizational culture. In the case, some lawyers state the reciprocity as a driver: “if I do it other people might do it, if I help, others help me”.

People usually share their knowledge with people they trust as was the evidence in the case. In situation wherein staff knew each other, had mutual trust and worked together closely, they tended to share knowledge more. Therefore, the HI should promote trust among the employees.

Treating KM and knowledge sharing as valuable matters and generally improving their culture: There should be a culture in which the KM matters including knowledge sharing and reuse is regarded as an important initiation. In this respect the function of HI is not enough but all parties including the managers should perform supporting roles. HI should address continuously and gradually all different types of cultural issues by changing inappropriate ones and improving good values and habits.

[To improve knowledge sharing and reuse] well I think it is a constant process of maintaining your cultures, maintaining habits, impressing upon people [the] importance of it, encouraging people, I think that we could do more of [it], providing good examples (More in Appendix E.10).

Appropriate HI. Due to the importance and broadness of cultural issues around knowledge sharing and reuse, this problem should be addressed by both Central HI on the firm-wide level and through the Local HI within each group. In the case, the KM team, although specifically responsible for providing and running KM and IT infrastructure for knowledge sharing, generally promote KM in all the divisions. But the Local HI specifically focus more on cultural work; as a KM team member said: “I think it [this culture] need to be promoted from within [the groups] or needed to be promoted by the superiors or partners”.

As the data show, sometimes groups are not interested in KM and KMSs, so each group, through a dedicated Local HI, should be targeted and take the main responsibility of improving knowledge sharing and reuse, because the KM team is not able to do more effective cultural change in detail. However, here the role of the Central HI is important because sometimes problems in sharing knowledge do not occur among people of the same group but between practice groups; members of these groups may feel that their knowledge forms their individual group power. The Central HI needs to consider and address this problem: “People basically work underneath a partner in the divisions and can pretend to be quite loyal to them as well, so do not necessarily share information across the different branches”.

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4 Managing and providing incentives for knowledge sharing

People may be reluctant to share or even reuse knowledge because of the lack of incentives or rewards. In the case, lack of incentive is acknowledged by many participants as a reason: “there is no reward for it; apart from the general warm fuzzy feeling that you get to having [made] a general contribution, a lot of people are not motivated to contribute” (More in Appendix E.1).

Some staff may not contribute to KMSs because they themselves may not know the value of KMSs and the knowledge derived, and may not even use it. In this regard, one of the interviewees said that roughly about 60 percent of staff are using KMSs to find knowledge, which means many still were not using them and probably not contributing as well:

...well [a] few reasons I think that play a part is, there are no incentives to look at; it has not been articulated to the people on the ground why they would possibly look at something like that.

To increase more knowledge sharing and reuse, the HIs should work with the managers to provide an incentives plan. The incentives may not be all financial; they can be in different forms such as open recognition in the group or the firm, or potential promotion. Incentive can even be included in their performance review as was case in some groups in the firm in which who contributed got a point in their performance appraisal:

I think that work done in respect of knowledge sharing should be rewarded, perhaps in some way that would be very good idea because that would encourage people to do it and the reward really needs to be no more than being acknowledged perhaps in their reviews” (More in Appendix E.12).

Appropriate HI. Due to the involvement of different parties in providing incentives, coordination is needed among HIs and other parties such as top managers and supervisors to accomplish this task. In the case under study, the Local HI, mostly were involved, because they closely worked with the lawyers and their supervisors. But it seems there is a need for a firm-wide procedure and incentive system for KM work, so the Central HI should also play a role.

5 Encouraging knowledge holders to contribute

Another problem is lack of willingness to be involved in knowledge works; because knowledge sharing and KM works are voluntary, and perceived as not an immediate priority in an organization (but rather like an investment for the future). This is more severe for knowledgeable experts when it involves time-consuming for it and sometimes even losing the privilege of having that knowledge without immediate
return for the person. Interviewees also gave the lack of encouragement as one of the reasons for not sharing: "... a lot of people are not motivated to contribute".

At the same time, it is necessary to have staff knowledge shared because in addition to other reasons already mentioned in this chapter, turnover of staff, especially in a knowledge-intensive law firm, is high – for example, one of the interviewees in the firm stated that generally law firms have about 30 to 40 percent turnover. In this situation, when someone leaves, some part of the intellectual property of the firm will be lost.

In addition to providing other facilities such as incentives and better working conditions, HI should constantly encourage staff to share and reuse knowledge at every opportunity, from one-on-one meetings to formal seminars or meetings. This function of HIs was evident in the case, as a KM lawyer said: "It doesn't always happen as it should, but there is encouragement to do that, I am certainly busy encouraging to share it because that is my role to do that" (More in Appendix E.13).

**Appropriate HI.** To encourage people to contribute and use KMSs, the Local HIs are more useful because they are close to the knowledge workers. Also, the Central HI can and should support and generally encourage, specifically in units that do not have a Local HI. However, encouragement is not enough; it should be backed by other initiatives and the support of top managers and all parties (see Appendix E.14). Also as one of the lawyers said, encouragement by librarians (Central HIs) who usually are not at same level of expertise as the core business staff in the organization is not always useful. Thus Local HIs are more appropriate for this role because they are same level as practitioners and colleagues.

**6) Promoting and providing training in KMSs and KM works (non IT)**

Another problem is that some staff are not aware that there are KM initiatives and KMSs or tools in the organization. For example, one lawyer said that she had never contributed knowledge to the KMSs because she did not know where and what they were. There may also be a situation in which people do not contribute knowledge to KMSs because they may think that their contribution would not be publicized for reuse; in other words, nobody would use it. Moreover, they may have problems in searching because they do not know the keywords or terminology of the systems:

> I must say beyond looking for precedents, I haven't used the databases [KDB] at all; that is not saying that has not got valuable things in it, just that I haven't been alerted toward those valuable things that might be, ... I really don't know what is in. .... I am not aware of enterprise search as well (More in Appendix E.15).
Thus another function of HI is to increase awareness of people about KM and KMSs in the organization through different methods such as seminars and training sessions, where staff are alerted about them and convinced about their usefulness. They may need training about the non-IT part of KMSs such as keyword, terminology, and relevant basic search skills and procedures. (Appendix E.15).

Again, it is very important that the HI first train or promote the KMSs to the managers or decision-makers and convince them of their usefulness, and then with their support promote KMSs in groups. For example, in one case in a division, staff were using the KMS for knowledge sharing and reuse because it was emphasized by one of the firm’s partners (see Appendix E.15).

**Appropriate HI.** Because this role is about non-IT promotion and training of KM and KMSs, it can be better performed mostly by the Local HI. The Local HI is in a situation and location with more close and frequent contacts with users, and the HI is thus able to see the needs and determine the level of need to promote the KMSs and how to promote them.

(7) **Facilitating creation of appropriate working environment for KM activities**

Lack of time for knowledge sharing and high work load is one of the main problems which all of the interviewees strongly argued as a reason for not sharing knowledge (Appendix E.16). Simply, they do not spend time on knowledge sharing because they are busy and knowledge sharing or any KM activities are not their main business. Working in a competitive environment, the firm required their staff to get as many clients as possible and to provide high-quality services or products.

On the other hand, sharing knowledge, especially in the form of contributing to KMSs, takes time, for example, preparing documents, filling in special forms, attaching appropriate keywords, getting approval of supervisors in some cases, and uploading. Therefore, they may not share knowledge and sometimes the knowledge may be lost, especially after an important project from which they gained the knowledge. In this situation, knowledge sharing is not the priority of the people concerned:

> I like to share as much as I can because ... I am a ... believer in sharing information. Unfortunately the practice of law is such a [big] obstacle [to] getting the time to do it, so yes, I am very willing to, [but] I'm going to be honest and say that I contribute little [to KMSs].

Data in this study show that in a very busy commercial law firm, there are a lot of pressures from clients to get jobs done quickly and efficiently, so the firm needs either many more lawyers to cover the work and knowledge-share as well, which
means a large cost to the firm. Alternately, the firm may employ fewer lawyers but ignore secondary or non-immediate matters such as knowledge sharing and reuse. The lawyers place priority on client work and not KM work. It is matter of balance, as one of the interviewees said.

This problem is relevant to the way a firm works, in which time for KM work activity is neither billable work nor a priority. The nature of knowledge-intensive companies is such that usually every hour of experts’ time is allocated to a billable work, and the organization accounts and reflects the amount of time needed to earn money in the competitive market. In a law firm usually the lawyers charge the clients according to the time spent on the case; knowledge sharing or any other KM work is not part of the brief and thus cannot be charged. Furthermore the firm’s managers may not allocate enough funds in the budget for KM activity:

Well, I think it [contributing knowledge to databases] varies depending upon the individual, how busy they are, and so on, but I think there is some important structure or things about the nature of work in big firms which make it difficult for them to do that (More in Appendix E.17).

HIs should try to create a balance between billable work and KM work. Every organization should have long-term goals besides the short-term ones. If working for current clients and the push to earn more money be the sole focus of the business, there may be losses in future due to being ill-informed, or not having enough preparation for future. In the context of a law firm, it seems that putting too much importance on billable work disturbs a useful balance; all aspects of the work including knowledge sharing produce more successful results. An organization should allocate a fraction of time of the staff for KM work; as shown in the case where one of the groups in the firm required staff to allocate a time for other productive but non-billable activity:

We have productive non-billable matter numbers [in the firm], so the time you spend doing those things you can account for in firm and the firm can see that what you have been doing for example (More in Appendix E.18).

Making knowledge sharing and contribution to KMSs a part of work made a difference in some sections of the firm. The divisions in which a partner required staff to share, used KMSs more often for knowledge sharing and reuse: “I think that very much depends on the divisions, so [in] some [it] is mandatory to contribute and [in] some [it] is not so that's a factor”

An organization should realize that the value of KM work is not less than working for core business. There should be balance in this respect. If staff use all or most of their time to work for clients, they will consequently have limited time for doing the knowledge sharing but as confirmed by one KM lawyer in the firm, the time spent on knowledge sharing is very valuable amount because it is going to make the job easier
later. For example, some interviewees argued that if lawyers, after every accomplished job, by making it precedent or providing a transaction map in an annotated format, and contributing this to the KMS; others can use the information, or they themselves might reuse it. However, this does not happen easily and needs dedicated HIs to manage and coordinate the activities. The HI should make the managers and staff realize the value of knowledge sharing and regard it as a form of investment for the future (see Appendix E.19).

To facilitate and increase knowledge sharing, it should be made a job requirement as the interviewees argued in the case (Appendix E.20.) If there is no expectation to do so, because it is not in their job description, the knowledge experts would not share. It may not be a requirement in order to keep their job but it could be a requirement for promotion (this was recommended by some of the interviewees, to include knowledge sharing in performance appraisal). Some divisions in the firm implemented this policy. Setting a procedure can improve knowledge sharing; for example, to require staff to contribute certain amount of knowledge pieces to KMSs, or allocate 10 percent of staff time to knowledge sharing. This can take different forms such as contributing to KMSs, recording and documenting precedents, presenting in seminars and so on.

**Appropriate HI.** This role may not directly be done by both Local and Central HIs. But they can facilitate creating appropriate working conditions through consulting with top managers, convincing them. The HIs could make top managers and the firm’s owners (or partners) realize the value of knowledge sharing, persuade and advise them to make the working conditions of staff conducive to KM business. They could ask managers to consider KM in budget allocation and include it as a priority strategy:

[The] simple reality is unless the partnership recognizes know-how and information gathering and dissemination of information as a part of lawyers’ budget they would not get the level of know-how that best suits the firm, ..., while it is recognized that information is important, there is almost prioritization that invariably sees know-how far below budget, and you know it's a shame.

Therefore, Both the Local HI and the Central HI are responsible. However, the working conditions in every group may vary. Moreover, the HI needs to be close to practice groups and their decision-makers, and to understand the specific situation of the groups to advise the best options. Thus for the most part, this function should be performed by the Local HI, but to be consistent for all units in an organization, the Central HI should also be involved.
6.2.2 Providing tacit and direct knowledge sharing facilities and settings

Sharing and reusing knowledge is not just through the formal KMSs, the HIs should provide facilities that make the experts connect together and facilitate especially tacit knowledge exchange. Before explaining the four functions in this regard, the importance of and reasons for direct knowledge sharing is described. People may not contribute knowledge to KMSs because they prefer to share directly with colleagues; they encounter difficulty in contributing to KMSs; and the nature and particularities of the knowledge concerned.

Many people prefer and find it more expedient to share their knowledge in informal ways rather than contributing to KMSs for public use. For many reasons they prefer to share directly especially with the people around them whom they trust or with whom they have developed a professional or social network. In the case, almost all of the interviewees believe this, for example:

Lawyers generally share by talking, word of mouth, by talking to each other although it sounds strange but we do actually talk to each other. ... what lawyers don't do [is] that they don't share stuff in a system-based way like on the Intranet, very few people, I think, probably do actually upload the advices to sort of shared know-how site, there are more likely to say" ahh, I did some things on that a while ago, here is the document” or “I direct you to the document” ...that way it is one-on-one rather than sharing [with] the public.

Another reason that they prefer to share their knowledge directly is because it is usually hard to contribute formally to KMSs. Usually contribution to KMSs involves spending time and tidying up a document to make it useable for everybody, sometimes following a special procedures such as getting approval, filling forms, and uploading to the system. For example: “the main problem that I see with the contribution is that it is very difficult to contribute currently”.

Sometimes the reason is the nature of the knowledge: it may not be contributable, or it is complex or difficult to codify, or it is not developed enough, or not relevant to all. Nevertheless sharing this knowledge is valuable and useful because it provides insight for others to note:

Some of that complexity and specificity of the analysis and knowledge that we create make it difficult to catalogue, so another reason that we don’t put all of [the] clever opinions on a central database [is] because it is very hard to attach something …in a useful way (More in Appendix: E.21).

Appropriate HI. To address these problems the Local HI should consider comprehensively the knowledge sharing and reuse processes. There is a need to facilitate knowledge sharing in direct ways without KMSs as well, especially tacit
knowledge sharing which can be of high value. The Local HI is the best intermediary for this function (a point to be explained below) because the Local HI’s characteristics and position in the group enable him/her to do these functions. This role in fact is one of the main philosophies underpinning the need for a Local HI. Some facilitation strategies to address these issues as functions of Local HI are presented below:

**1. Organizing learning seminars or team meetings**

Providing a situation and the conditions in which experts or knowledge workers are able to meet face to face and to learn from one another’s experiences and thoughts was found in the case study to be one of the most effective ways of sharing knowledge. In the firm, this form of sharing knowledge is called *learning seminars*:

Honesty, I think that is perhaps the most effective way [of] sharing knowledge because ... as you will be aware, people, each individual has different ways of learning so that gives like the divisional people the chance to [have] visual interaction ... there will be also the opportunity to explore and ask questions and discuss for interactive people and there also [are] handouts which summarize the information presented to take away with us.

Local HIs organize regular learning seminars or meetings for their team in which experts present their lessons from experiences or researched topics, followed by questions and discussion. The role of the HI in terms of initiating, organizing and managing the seminars is significant and necessary. In other words the Local HI provides a setting for socialization and interaction to exchange knowledge, especially tacit knowledge. In the case, a KM lawyer performed this function:

I organize the learning education functions; we run those on a weekly basis on a national division approach ... so if someone has knowledge about [a] particular topic, telling and presenting on that topic to [a] group of people within the team ... and also we often present and include other people from other teams (More in Appendix: E.22).

Depending on the group leadership and the HI, sometimes the role of the HI is more intense and they need to be involved in composing teams, drafting the agenda, reviewing contents and directing presentations, and after the meeting, preparing and submitting the knowledge gathered to the KMSs, for example, a KM lawyer says: “I am in charge of everything, from who is in the team to what's on the agenda, to focusing the content of people's presentations to ...”

Except for special learning seminars, some other forms of meetings are usually held as regular practice group sessions. The HIs usually attend to those meetings to be aware what is going on in the group and what the knowledge and KM needs are. Also, the HI makes the group members aware about KM issues or programs in these
meetings. More social engagement and involvement with practitioners by HIs was
one of the requests of the interviewees.

As mentioned above, due to the Local HI’s characteristics and position, they are best
equipped for this type of function.

(2) Providing network facility and “yellow pages” to connect experts

In addition to facilitating group meetings and seminars, individual meetings or
contacts among practitioners to exchange tacit knowledge in particular, is another
way of improving knowledge sharing and reuse. Although usually knowledge
workers, especially lawyers, work individually and the areas of expertise vary within
organizations, providing facilities such as “yellow pages” or skills directories help
them to know “who knows what”; this was one of the demands of the users in the
firm.

This can be more significant in a multi-unit organization where practices are
scattered geographically. Usually exchanging knowledge inter-branch is useful
because there may be a person who works in a particular branch but in an area of
expertise not shared by colleagues in that branch, while in other branches of the firm
some other lawyers may work in the same area of expertise. Introducing and
connecting such persons can lead to useful knowledge sharing.

HIs should develop a “yellow pages” in which the expertise, interests, experiences,
and type of client or industry of the knowledge workers, together with contact details,
are systematically included as a database. It needs to be maintained by the HI and
kept current and updated. The data from the case study show that, despite many
interviewees’ demand and while some attempt was made to develop this type of
databases, no comprehensive system has been established yet in the firm. The staff
currently use their own networks or telephone directories (See Appendix E.23).

Another important role that HIs can play in this respect is being the source of “who
knows what” for experts. They can perform this function because of their situation
and nature of their work engaging with experts which enable to know “who know
what”. Introducing appropriate sources of knowledge to users in the firm is
considered to be high-value knowledge:

I will often get people just coming to my office, and even my peers from other
groups. I tend to be the source of the information; if I don’t know the actual
answer or know the source, I will be able to point people to right direction.

Moreover, this facility is important because sometimes the contributed knowledge in
the KMSs is a starting point and the user needs to contact and follow up the matter
with the contributor to gain rich knowledge.
**Appropriate HI.** Preparing and developing “yellow pages” or introducing experts to one another needs to be done by both types of HIs. For example, the Central HI, such as librarians and helpdesk staff, work broadly with people from many groups and they know to some extent who works in what area, so they can refer experts to one another for tacit knowledge sharing; this is a brokering role, as was the case in the firm: “X [a KM team member] is good with that, she can assist because she knows a lot of personalities in the firm.” Also for facilitating this type of knowledge sharing, usually the superiors are in a good position to direct people to relevant experts:

> If management [is] taking interest in this kind of stuff they can look at what [is] happening; they can look at, you know, sort of information gap or needs around the organization and say you should talk to them about this because you have got knowledge they can benefit from.

Creating and maintaining “yellow pages” or a skills directory should be done by both the Local HI and the Central HI, because they can provide complementary information. Furthermore, their mutual coordination is important for developing and maintaining such knowledge.

**3) Initiating and facilitating social events**

To make experts familiar with each other and their respective work experiences, in exchanging knowledge, especially tacit knowledge, informal activities such as social events is important. These events usually lead to development of networks for future knowledge sharing. Usually in these events experts develop mutual trust and productive working relationships. The case study data suggest that people who know each other or work together in close physical proximity as a team are happier to share especially high-value knowledge. These social events are also especially useful for experts who are not located in the same office, but geographical separation makes organizing social events more difficult: “We go away as a group of lawyers once a year through weekend … and it's a group of high integrity and we have no fear in talking candidly.”

This role can be done best by coordination of both types of HIs, but Local HIs should initiate and plan them because they know the context and the group, and knows the suitable time and able to do better coordination and organization.

**4) Facilitating knowledge generation**

Another situation that requires intermediation is knowledge generation. There is important knowledge in an organization especially in tacit form held by the head of the experts. The HI can provide facilities such as meetings to gain these experts’ knowledge and develop it to form new valuable explicit knowledge. This may be
achieved by organizing a meeting and inviting experts at which they discuss and exchange their knowledge about a topic to produce collectively a new knowledge.

One typical example of this type of knowledge production in the firm is precedent setup meetings. Precedent is “an act or instance that may be used as an example in dealing with subsequent similar instances” (Precedent. (n.d.). The American Heritage® Dictionary of the English Language). Drafting and reusing it in a law firm in some divisions can be extremely useful. It is considered valuable pieces of knowledge in the firm that can improve performance and productivity of the staff and firm by saving time and money. Drafting a precedent means putting together different pieces of knowledge and producing template documents for lawyers, so they do not have to draft the document from scratch.

In the case study, a KM lawyer gather other lawyers who have knowledge or experience concerning a particular subject or a precedent document in a meeting, then manage the meeting in a way that all participants exchange their knowledge; finally this group drafts the new or updated precedent and uploads it into the database. A KM lawyer describes it:

I run a drafting group for lawyers to draft precedent documents, I kind of project manage [this and] sort of work out what we need and I get the right group of people together who have the right knowledge on that particular subject and organize the meetings and I chase them up and make sure that all got the right documents and that we have a right range of people. We have to have some seniors, some juniors, some people to be signing off as we go, we want some juniors to do some research, I follow them up by setting up the next appointment, basically I project manage that drafting process (More in Appendix E.24).

Precedent drafting is one example in which the HI plays an important role in knowledge generation. Interviewees appreciate these meetings as a good way of sharing and generating knowledge. Depending on the area of practice, the HI may take on different tasks but certainly intermediate knowledge generation by actually facilitating and enabling collective knowledge sharing. For example, sometimes a KM lawyer consolidates particular pieces of knowledge to generate a form of valuable knowledge (see Appendix E.24).

Appropriate HI. As mentioned above, the Local HI is in the best situation to perform this role because he/she has specialized knowledge and know whom to call to the meeting. Although the Local HI initiates and manages knowledge generation, the Central HI is also involved in the technical development of the precedents. In the case, there are sub-groups in the KM team which facilitate and help the precedent development for lawyers.
6.2.3. Facilitating explicit knowledge reuse flow

As discussed in chapter two, one of the main issues in organizations is the knowing-doing gap; as an interviewee pointed out: “I believe that all the knowledge of the organization is not used properly”. Another reported lack of knowledge sharing: “…there is more focus on each person having their own little set of folders or own little set of advice folders”. Or another lawyer says that people may not share knowledge because they think their contributed knowledge may not be used. Therefore, these types of problems require HI' function to facilitate more and better explicit knowledge reuse and sharing. The relevant functions are described below.

(1) Introducing sources of knowledge outside and inside the firm

Sometimes the problem with experts, especially new staff, is that they may not know clearly what knowledge they need, or they may not know how to find it. Due to their broad information about the sources of knowledge in the groups, HI's, especially the Local HI, can guide experts to the source of the knowledge inside and outside of the organization, even sometimes helping staff to define their problem. For example, one of the KM lawyers said that if people can not find what they needs in a system we recommend to them another appropriate system. In the firm studied, besides the Local HI, librarians usually perform this role because they know more about explicit knowledge sources.

(2) Capturing and collecting knowledge

Knowledge as intellectual property of the organization needs to be managed well and one of the first steps is collecting and capturing it to make it easily available for reuse. Although IT plays a significant role in knowledge collection, IT or technology-oriented roles are not the main issues here; knowledge-oriented HI's need to recognize the organizational knowledge needs, sources of knowledge, and mechanisms of capturing knowledge.

One of the problems in knowledge reuse (finding and receiving knowledge from KMSs) is the lack of comprehensive knowledge in the KMSs which is a consequence of lack of knowledge capture:

In some cases just a lack of things, I mean the KDB, could have a lot of material on it, so sometimes imagine they search it and nothings there on what they [are] looking for” (More in Appendix: E.25).

As one of the interviewees stated, capturing knowledge and putting in KMSs in a multi-unit firm is important even in terms of consistency of business in all relevant units and risk reduction:
That is the real challenge across the firm of this size because partly it is a KM issue but also it is risk management because if we are advising two clients and completely in different ways, that is not just a good look and also risk that is a potential problem.

Almost all interviewees emphasize capturing knowledge as a firm’s concern and one of the primary and very important functions of HIs. One user mentioned the knowledge of individuals as the firm’s intellectual property that should be used by anyone in the firm. He saw the HI’s function in this way: “Make sure that they capture the knowledge of employees and probably to minimize any loss that happens when people leave the organization, that is intellectual property that is developed here.”

Capturing knowledge is thus very important in the current employment market, especially in a knowledge-intensive firm in which there is a high rate of staff turnover. As an interviewee said, there should be a mechanism to collect staff’s accumulated knowledge before they leave. Also, to maintain corporate knowledge, in some cases a knowledgeable person, after leaving, should have his/her files and works examined and reviewed by the Local HI to determine if anything can be used by others. By capturing single individuals’ knowledge and making it available for others to reuse, the individual knowledge turns to organizational knowledge (see Appendix E.26.). To perform part of this function HIs monitor and research the knowledge sources for staff even from daily media sources.

**Appropriate HI:** In the case, librarians sometimes collected and combined special forms of knowledge such as industry-relevant knowledge or news, mainly from external sources, and made them available to lawyers directly or through KMSs. They got information from outside sources and uploaded this to KMSs even without explicitly being asked by divisions, such as precedent forms. Apart from librarians, importantly the Local HIs were involved in capturing knowledge because they better know the sources and the group’s knowledge needs. In collecting internal knowledge, the Local HI is very important and cannot be replaced by the Central HI.

**(3) Helping knowledge holders to contribute**

It is not enough just to encourage and inform the experts to contribute knowledge; HIs should reduce the burden and time of contributing knowledge to KMSs by assisting them in the process of contributing, such as preparing the documents and assisting in entering them to the KMSs. This is very important because usually experts are busy and usually knowledge-contributing is voluntary and can even be a frustrating task:
If you are busy doing clients’ billable works, something that could be added to KDB, it might sit in your tray; it might be [a] few weeks or months also until to get time to add it.

The preparation of documents for contribution such as “desensitizing” them from special client names (related to privacy and confidentiality issues), checking copyright and obtaining authorization from superiors, takes some time (see Appendix E.27). Moreover, entering the documents to KMSs requires following some procedures and technical know-how such as entering in the right categories with appropriate keywords, codifying knowledge, and adding description or metadata, besides dealing with the IT part of contributing to the KMSs. All of these require the HIs’ assistance, and lawyers appreciate this particular service of the HI (see Appendix E.28).

So, HIs should go to the experts and ask them whether they want to contribute knowledge and need assistance. However, HIs should consider that generally experts are independent and the HIs not behave in a way that implies that they are interfering or making their work situation inconvenient by interrupting and asking the expert repeatedly, or putting them under pressure to contribute (as one of the users mentioned).

Hindrances to contributing knowledge to KMSs are not only the burden of IT but sometimes the legacy system or procedures make the knowledge sharing flow slowly. So the HI should be active in facilitating easy ways of contributing knowledge. For example, in the firm studied, in order to contribute to some KMSs, the document needs to be signed by a partner for quality check, which sometime hinders the contribution: “I think procedures such as signing the document by partners sometimes hinder the contribution, it could be improved, that is more legacy systems sort of stuff”.

**Appropriate HI.** Assistance for knowledge contribution is partly a technology-oriented role which can be done by the Central HI, but it still involves knowledge-oriented roles because the HI needs to consult and ask experts for details. The HI should also have adequate knowledge on the topic or subject to be able to find the appropriate categories in the KMSs and know the relevant keywords for the search. In some cases, other abilities such as in writing summaries and adding metadata are required. Thus this role needs to be a shared responsibility between the Local and the Central HIs. In the firm studied, the KM team usually did not have direct contact with lawyers to help them contribute but in situations of large workloads sometimes they assist lawyers; it also depended on the group – for example, whether or not they had a KM lawyer or junior lawyers, or secretaries, to assist them. In this circumstance, the Central HI plays a less of a role than Local HI. For example, one of the KM coordinators in one of the firm’s divisions stated:
I set up the schedule for our junior lawyers to make Intranet contributions on a weekly basis to collect the information that [was] used and created within the group ... and put it up on the KDB.

(4) Distributing knowledge

Another familiar function of the HIs according to data from the case is providing needed knowledge for legal staff or users. The knowledge in the KMSs is available to users on their desktop, but for new materials and any changes, they need to be informed. HIs send news alerts and any updates of the KMSs to users usually by email, because as mentioned by one of the users, informing the availability of knowledge is helpful. Distributing knowledge is an important function of HIs as emphasized by a KM team member:

We [are] trying to keep on top of things and just make sure ... pumping the information through lawyers. ... with respect to journals that come through, they are relevant to particular groups. Once a week we would send an email and attachment to all the lawyers in that particular division saying this is a journal articles that came out, these are the changes you should be aware of. (More in Appendix E.29).

In this regard, HIs sometimes subscribe to a set of knowledge resources to be delivered to special users, or provide them with summarized news feeds. In the case study, the KM team performed this for lawyers (see Appendix E.28).

However, users argue that the value of the received knowledge updates by email is dependent on their available time, and due to many emails that are received, they may not be able to review all of them or may not need them at the time of receiving. One of the users says: "Every thing's done by email, so, I mean, it is only as useful as the time you invest in...". So the HIs should consider the information overload which some lawyers in the firm mentioned and try to make them easy to use by packaging, summarizing and so on (this is discussed as a next key function of the HIs): “lawyers get a lots of information across their desk and they have to filter the information and sometimes it is quite [a] time consuming job and as a result they just don’t”.

Appropriate HI. Distributing knowledge is partly technology-oriented but mostly knowledge-oriented role, because intermediaries need to know the knowledge needs of different groups, understand the knowledge itself, and the appropriate ways of distribution. As mentioned by one interviewee, mostly KM lawyers are involved in distributing knowledge. So both the Central HIs, due to their ability in IT-relevant matters, and Local HIs, due to their knowledge and position in groups, should perform this task in a coordinated manner. But in the case of subscription to special types of knowledge, the Central HI mostly is in charge (which is explained later).
(5) *Researching and providing knowledge for users individually*

Doing research or providing knowledge for individual experts on their request about a special area or topic is another function of HIs. Librarians in the firm facilitated knowledge flow from different sources including organizational KMSs to the users by searching knowledge for them. In the case, this role was regarded by lawyers important, because it increased efficiency and saved time by having part of their research done by others. While the lawyers were doing other works, librarians conducted searches on requested topics. This usually was more effective because librarians know better the knowledge sources, KMSs, and research tools:

They [librarians] provide very specific solutions to things so if a lawyer is looking for specific research or cases, then they can provide that and often that kind of knowledge is very valuable to lawyers, obviously when they [are] running their transactions (More in Appendix E.30).

In addition to researching and providing knowledge for individual users upon request, HIs also do general research on relevant topics of interest to one group or more. They capture knowledge, for example, about a new area of practice and then compose and make it available for all users. In the case study, business resource librarians were performing this critical role. A librarian, for example, looked for various critical pieces of information that occurred within an industry at a certain period of time and collected information from different areas:

When a new case comes up or new clients, we were asked to do an initial lot of business research, say for a tender, so one librarian in particular will be assigned to do a whole lot of business research and that means lawyers go to, you know, they get the picture, well-armed with the picture of the industry environment and the challenges (More in Appendix E.31).

*Appropriate HI.* So this function in the firm is one of the responsibilities of Central HIs, namely librarians, which is mentioned in their job description as well. However, general research can be done by them, as was case in the firm; but the more specific researches maybe more appropriately be done by the Local HIs. Also, part of this function is technology-oriented because sometimes, the HIs are asked to do this because she or he knows how to work with KMSs. It is also partly knowledge-oriented in that it requires some knowledge about the area of practice. So this role is both technology-oriented and knowledge-oriented. While in the firm studied currently Central HIs perform this function, it seems Local HIs can perform this function well in some cases.
(6) **Performing library and subscription work**

Another function in facilitating knowledge reuse is providing and managing library resources, both in soft and hard copy, for users. To provide part of knowledge for users HIs need to purchase or subscribe to sources of knowledge such as external databases on request by practitioners; which some users regard as sources of high-value knowledge.

This was an important and unique role of the Central HI in the firm based on the organizational documents and the interviews. Probably after technical or IT support of KM initiatives and users, library work and subscription services were among the most important role of the KM team in the firm. Due to the position of the Central HI in the firm and the special librarianship skills of Central HI staff, they are the appropriate intermediaries for this role; but of course the Local HIs and experts themselves have a critical role in identifying the knowledge needs and requesting services or products to fulfil those needs. (Some interviewees' ideas on the importance of this function are presented in Appendix E.32.)

6.2.4. **Performing knowledge work on KMSs: Improving the usability and usefulness**

Running and maintaining the KMSs’ content require dedicated HIs. They should make the content of KMSs current, useful and usable by doing knowledge work on the KMSs. These knowledge works include improving knowledge presentation, applying mechanisms to ensure the quality, attaching meta-data or meta-knowledge, and updating knowledge.

(1) **Improving knowledge presentation in the systems**

Another problem of KMSs is the difficulty of retrieving from or contributing knowledge to the system. The system may not be convenient or easy to use in terms of quick searching, retrieving, or uploading. This makes users reluctant to use it, despite the fact that the system may actually contain what they need. This problem was evident in the case: “I would say that sometimes it can be hard to find the date or things ...” (More in Appendix E.33). Part of this problem relates to IT-relevant design issues, and partly to non-IT matters; it directs us to the lack of knowledge work on the KMSs by HIs:

From my perspective, the KDB has problem in that nobody is monitoring the materials going on to it which I think reduces the confidence of people using it, and nobody is going through and checking ... there should be really some systems put in place where someone checks everything on there ....
The lack of knowledge classification in KMSs makes knowledge retrieval and reuse difficult and time-consuming. HIs can manage this issue by indexing, categorizing, sorting and summarizing knowledge in the KMSs. For example, this can be achieved partly by providing appropriate keywords for all the documents in the KMSs. Some part of this categorization can be managed by devising mechanisms of knowledge entry to the systems in a way that puts the entry in different categories depending on, for example, labels, keywords or category determination while entering. For instance in the case study, this applies as one of the users says: “whoever writes the article categorizes it, so it will be put on the Intranet with those categories”.

But not all people who want to contribute to the KMSs know either all the categories or are willing to engage or spend time on it. So the Local HI can help by filling the contribution forms and uploading it. But due to accumulation of knowledge in the systems at certain times and changes that happen, it is important for the HI to review the contents of the systems and revise the classifications if needed. Both the Local HI and the KM team sometimes are involved in this activity. For example, a Local HI in the case study said:

I chase people, so I ask people whether they have anything to be included in the KDB. If they haven’t classified that work, then I will classify and I will arrange it to be posted (More in Appendix E.34).

Another problem of this era is information overload. Users experience a steady and constant flow of both relevant and non-relevant information from everywhere. On the other hand, time is limited for the knowledge workers and they need just relevant and brief knowledge feeds. So another role of HI is to address this problem by every possible way such as summarizing and filtering the contents of the KMSs or distributed emails:

Lawyers get a lot of information across their desk and they have to filter the information and sometimes it is quite time consuming job and as a result that they just don’t (More in Appendix E.35).

Another facility which helps users to find knowledge easily and quickly in categorized format is advanced search engines. Although designing and implementing them are technology-oriented, it needs to be initiated and recommended by knowledge-oriented HI. Due to the existence of different systems in the organization, a good search facility is one that can search all the systems once and save people’s time, as mentioned by one of the users: “Enterprise search, which index all the repositories to decrease amount of time for lawyers to go to every different repository” (More in Appendix E.36).

Another way to facilitate easy knowledge reuse is by providing a knowledge map which facilitates users’ easy access via, for example, a web browser set up for
specific knowledge search. The knowledge map can be regarded as a guide to the organization's internal or external knowledge repositories.

Depending on the organization’s practice and the domain of its practice, there may be other challenges to the application of KMSs which should be considered. For example, the firm may have other branches in other countries with different languages, so the HI should probably facilitate knowledge translation or interpretation.

Appropriate HI. As mentioned before, part of this role returns to the system design and customization which is technology-oriented and can be done by the Central HI. But part of it is knowledge-oriented and needs specialized knowledge about both the practice of the groups and also KM expertise, so this role should be managed or coordinated by the Local HI. The Local HI should work closely with users and be able to assist with problems or needs regarding knowledge retrieval. He/she should have enough specialized knowledge to be able to do knowledge work on the systems.

(2) Ensuring the quality of knowledge in KMSs

The lack of quality of knowledge in KMSs makes users less confident about using the systems both for getting and contributing knowledge. Many in the firm studied had concerns about the quality and regarded it as a reason for not using them. High-quality KMSs usually means that the content is accurate, important and relevant to their job, and useful. One of the lawyers reported about the quality and value of knowledge in KMSs, and pointed out a need for a HI:

I see that [material on KDB] low value, lower value, because the material goes on there has … there is a problem really with it, there is certain lack of quality control, it is very variable in quality and usefulness to people, it is very ad hoc what there is on there, only really what people contribute which may not necessarily be what the next person wants to use. it is …varying ages and it is not reviewed in terms of going out of date, so … there has this warning saying this is the KDB document, you know, no guarantee that it is legally correct; no one is really re-seeking it. It is useful only as a repository of information which you can look at but I would hesitate to tell people to rely heavily on it, to me it is much less of value …. From my perspective the KDB has problem in that …nobody [is] monitoring the materials going on to it which I think reduces the confidence of people using it… (More in Appendix E.37).

One of the reasons that sometimes negatively affects the quality of content of KMSs is incentives or policies in an organization which require staff to have certain amount of contributions over a period of time. Although these initiatives encourage knowledge sharing, if there is not a system of control in place, it makes the KMSs useless due to the contribution and storage of much low-quality information.
Retrieving knowledge then becomes hard and makes people less confident of using the KMSs as a source of knowledge (see Appendix E.38.).

**Appropriate HI.** For high-quality KMSs, then, there should be mechanisms to control the contribution of knowledge, and a dedicated HI is the best option. This intermediary should be the Local HI, preferably a senior practitioner who has specialized knowledge and experience to monitor, review and judge correctly the quality of KMS. The HI should provide procedures or policies, for example, setting criteria such as only important and insightful documents should be contributed. Sometimes Local HI may not have the qualification or knowledge in all areas to judge quality; in this situation he or she should coordinate with superiors or experts in that area to evaluate and approve the document. In the case study, the quality control varied, depending on the practice groups; for example, in one group a KM lawyer was responsible for reviewing and revising the database content for accuracy and usability (see Appendix E.39).

Usually partners are involved in this process and approve the document before it is entered into the KMSs, but this varies depending on groups. However, just relying on superiors for controlling the quality of KMSs sometimes is not appropriate because the senior staffs are busy and do not like to spend their time on other than core business. They may not take it seriously; for example, one of the HIs in the firm studied had concerns that due to seniors' busy work schedule, quality check is delegated to junior staff who, however, lacked the credibility to do so (see Appendix E.39, the last quote).

Therefore, a dedicated Local HI should be in charge of this role. Another matter here that should be managed carefully concerns procedures for quality control; it should not be an obstacle or discouragement for knowledge sharing, because one of the main purposes of KM is to promote knowledge sharing.

(3) **Adding meta-data**

Another way of increasing the usefulness of KMSs is associating a piece of knowledge with meta-data in KMSs. Meta-data can be the context of the knowledge, a description or explanation about or around the piece of information which increases the value and the quality of the knowledge. The information which is marked with date, the date of last review, condition of application, and many other properties or attributes of a piece of knowledge, make the knowledge high-value and high-quality. Meta-data is adding context to the information which is an important component of the knowledge. For example, one lawyer stated the importance of meta-data in the Precedent Database:

I think we can always do things better for precedents if you attach any discussion on precedents, ... more detailed information like really detailed notes with precedents,
particularly contractual precedents, about why are clauses there why it is worded in particular ways, having hyperlinks to case law and legislation ... behind certain provisions and that would be just so useful [laughing], so easy like in many respects if you have that sort of keep up-to-date well that would be great (More in Appendix E.40).

**Appropriate HI:** As case study data indicate, this role should be performed by the Local HI due to its unique characteristics. They can perform this through different methods such as designing contribution forms to contain more contexts around the contributed knowledge; creating procedures about the contributions; encouraging and reminding the contributors to add metadata; and reviewing the content of KMSs and adding more details or asking relevant people to add details.

(4) Updating the content of KMSs

One of the main concerns of users is that the knowledge in the KMSs is not current. Most of the interviewees mentioned that one of the problems of finding and receiving knowledge is that the knowledge in the KMSs is old and not updated in accordance with the changes (see Appendix E.41). One lawyer regarded this as a drawback to using KMSs: "...key problem with all of these [KMSs] is being up-to-date". This is more significant in the context of law firms because their work is based on current laws and regulations which change over time (see Appendix E.42). Moreover, this makes users reluctant to use the KMSs even for contributing knowledge, because they may find them unreliable.

Over any period many pieces of knowledge are uploaded in the systems, which are needed at certain points in time, but this accumulation of excessive knowledge material creates a problem in knowledge retrieval. Because the material that goes into the system is stored for a long time, it needs review and revision or updating. Users want to keep only relevant and current knowledge content in the system: "[KDB] continues to grow; they do take off things that are no longer relevant; if areas change they take them off".

But removing old material in a law firm does not always occur, because every piece of law or legislation even if not current may have historical value. Thus some of them should not be removed but probably an explanation or meta-data may be added about them or kept under different categories as was case in the firm studied (see Appendix E.42, the last quote).

**Appropriate HI.** Thus, making the content of KMSs current is a very important role for HI. However, the data show that the responsibility of updating the content of the KMSs is ambiguous. It is done partly by the KM team, but they expect users and units to take the responsibility for the update. Appendix E.43 lists quotes form 166
interviewees about ambiguity of responsibility, but at the same time indicates that all parties are responsible and their coordination is necessary to have current KMSs.

Due to the nature of this function, a combination of all parties, including users, Local HIs, and the Central HI may be responsible, as it is mentioned by an interviewee, it is a "shared responsibility". For example, lawyers, who use the KMSs, know which piece of information is current, which one not, and they can change or ask it to be changed. Also those who contribute knowledge should add explanation while contributing or later to indicate until when it is current.

On the other hand, the Central HI or librarians are aware or have access to some sorts of information in the systems which change over time, especially knowledge that come from external sources. They are more appropriate for the responsibility of updating that content, for example, for general or typical knowledge, which they understand. They know that if a change happened in law, they can update the content of the KMSs as it happens. But generally the KM team is responsible for KMSs, not for the content.

For knowledge contributed to KMSs by users, considering that the contribution is voluntary, if lawyers are also made responsible for updating, it may make them reluctant to contribute. So it seems that due to its position, the Local HI should take the main responsibility for this function through monitoring and reviewing the contents of KMSs by coordinating with all parties.

6.2.5. Coordinating the intermediation roles (generally KM)

Due to the involvement of many parties and initiatives in facilitating knowledge sharing and reuse, one of the important knowledge-oriented HI roles is coordinating the KM facilitation, especially knowledge sharing and reuse intermediation functions. This is more vital for a large multi-unit law firm where both main types of HIs exist. Although the Central HI is firm-wide and has single management set-up, each group has its own Local HI whose roles need to be aligned with the firm-wide intermediation. This section describes three important areas which were dominant in the case study.

(I) Taking the responsibility of running KM and KMSs

KMSs have multiple aspects such as IT and non-IT; for successful knowledge reuse and sharing, these various aspects need to be facilitated by different parties or intermediaries. Although designing and maintaining KMSs is a technology-oriented role, it is initiated, requested, fed and managed by knowledge-oriented HIs who are mainly Local HI. Usually the IT department in a knowledge-intensive firm provides technical services for the KM, but KM team has the main responsibility for providing and running KMSs.
The responsibility of KM and KMSs should be transparent, otherwise it can be a source of problem and conflict and failure in the facilitation. As discussed above, in the case of the responsibility of updating the KMSs, better maintain and running KM and KMSs requires many parties' knowledge and skills. Furthermore, the need to meet many parties' interests and expectations, providing and running KMSs require a mutual responsibility with coordination. For example, users, KM and IT departments, managers, owners all should provide input and also should see their interest is satisfied. An interviewee about the responsibly of running KMSs says: “Combinations of, technology [department] maintains the hardware, KM team maintains the Precedent Database, the KDB, a combination of KM and staff in the divisions maintain the Intranet”.

In the firm studied, it seems that the responsibility is not transparent, similar to the ambiguity of updating the KMSs. Although the main focus of the study is not on this issue, more data are needed to claim this firmly; the current data show that this responsibility was distributed in the firm with insufficient coordination. For example, the KM team members, the Local HI in groups, and lawyers sometimes claim responsibility or nominate as responsible for different parts of the KMSs.

However, it should be acknowledged that coordination is a complex task because there are many different systems with different targets, and many different practice groups. Also, taking part of responsibility by users is very important but actually as mentioned by an interviewee, lawyers are not paid to do KM relevant activities. As a result maintenance of KMSs becomes probably the most difficult aspect of KMSs. As a KM lawyer remarked: “the policy is that everyone is responsible [for Intranet] but [the] reality is that no one does it so [it has] become my responsibility” (More in Appendix E.44).

Appropriate HI. Therefore, running and maintaining KMSs require the responsibly of both the Local HI and the Central HI, but this initiative should be well coordinated to cover all relevant facilitation roles and prevent double or parallel works. Due to the existence of context-specific issues of KM and KMSs in every group, the main responsibility should be with the Local HI, but at the same time the Central HI is very important and should be the coordinating mechanism for providing and running KMSs firm-wide. Some KMSs such as a Knowledge Database is a shared system for all units, but each unit has its own part in the system, so, the Central HI should coordinate the facilitation roles covering whole system.

(2) Encouraging and transferring best methods of knowledge reuse and sharing

Another knowledge-oriented function which needs to be done by HI is devising and finding the best ways or processes on different aspects of knowledge sharing and reuse. These best practices in KM can be about the application of KMSs, best ways
of sharing knowledge, simplified KM processes and so on. Usually all units of the firm are not the same, some do better than others because of many reasons such as support of divisions’ managers, good function of Local HIs or existence of knowledge champions. For example, in a division, people get involved more in KM activists because of partner support:

We have divisions such as dispute resolution that use the database quite a lot, maybe because the partner in the division made them. What you find is more and more people contribute to the database and the more they contribute to the database, the more useful become to everyone else.

Therefore, HI should monitor, review and find best practices, good habits, and improvements in the facilitations in different units and transfer them to those units which need to be improved. The HI should observe the advanced groups and then apply best practice from the advanced group to other groups. As a lawyer says: “KM team should work more closely with the groups that aren’t using the KDB properly and then maybe work with group developing a plan on how could be better used”

**Appropriate HI.** This role can be best performed by the Central HI. They have a general relationship with all divisions, and are in an appropriate position to see and evaluate all KM- and KMSs-relevant practices of groups, including knowledge reuse facilitation, to find and transfer best practice from one unit to another. For instance, they should review the whole organization’s technology application and then advertise, transfer, and encourage the best practice to all units. The Local HI could play an important role in getting and implementing the best practice in his/her group. In the case also the KM department has a KM Intranet which provides KM advice and tools for all groups including the stories of KM success in different groups. In the case study, the need for this function of HIs was evident (see Appendix E.45).

To perform this role, the Central HI should more closely communicate with groups and experts. One of the KM team members said that to be more effective we should “have more active role in the divisions”. In the firm, they tried to be involved more with units rather than being isolated. For example, in the firm studied, they sometimes attended the units’ meetings to encourage the KM affairs; or they organized meetings or seminars in this respect.

However, it is not always possible for Central HIs to be involved closely with every single group, if each group has its own Local HI, then the Local HI becomes the representative of the users in interacting with the Central HI. Also, the Central HI needs to coordinate the intermediation and facilitation roles among the Local HIs which can be done by regular meetings between Central HI and Local HIs in which the best practice of each group be shared with others.
(3) Coordinating and collaborating the intermediation with all parties

As discussed, managing knowledge and the KMSs and facilitating knowledge reuse and sharing in a large multi-unit organization is complex and involves many parties. So another important role of HI is coordination and collaboration of KM and KMS matters, with all parties such as different HIs, knowledge workers, managers and owners. Most of the interviewees in the firm confirm that this role is necessary.

With different HIs. First the facilitation roles and functions of both types of HIs are necessary. They should collaborate with each other and work as a community, because their success depends on each other. For example, one of the Local HIs disagreed with the idea of integration of the two intermediaries but believed collaboration and working more closely with each other improves knowledge sharing and reuse:

Integration is not [a] good idea, what needs to happen [is] they need to work a lot closer and they need to collaborate a lot more. I don’t think the integration would help but I think a greater level of collaboration would certainly improve (More in Appendix E.46).

With knowledge workers. HI also should have a good and close relationship with users or knowledge holders because performing many HIs’ functions is impossible without engaging with them. One of the philosophies of the existence of the Local HI is their closeness to experts in terms of location and context as well as mutual understanding of each others’ language, needs and interests. Not only Local, but also Central, HIs should be aware of what is going on in the groups through different ways such as participating in the group’s meeting and so on (see Appendix E.47.).

With managers or partners. Another party with whom coordination is vital for the facilitation is top managers and owners. Managers’ support is important in terms of allocating enough budgets for KM and KMSs, employing dedicated Local HIs, supporting their functions, and encouraging their staff to knowledge-share and reuse. Moreover, HIs should first convince and encourage the managers to support the KM initiative in the organization (see Appendix E.48). While Central HI liaises with firm-wide managers, the Local HI can have very important role in persuading and convincing the group’s managers to be aligned with knowledge reuse and initiate facilitation.

With other parties. In organizations, especially large multi-unit ones, there may be some divisions or parties who are involved in knowledge flows; these need coordination for successful knowledge reuse and sharing. For example, in the case study, some of these parties includes: the IT department which had an inevitable role
in enabling KM; the marketing division which is a source of important knowledge about the clients and industries (Appendix E.49).

As will be explained in the next section, the technology-oriented roles mostly are done by the Central HI but some of them that are purely IT-based can be done by the IT department of the firm, but those KM-relevant parts should be done in coordination with the KM department; as mentioned by an interviewee: “IT can support the network and email and things like that but they don’t support the KDB or Intranet unless it is network-based”.

Coordination of the facilitation roles can be best performed by the Central HI, because this type of HI have a firm-wide perspective and provides services to the whole firm; it is thus in a position to view intermediation as a whole with all parties involved.

6.2.6. Summary of knowledge-oriented HI type and functions

In this section non-IT relevant roles or functions that are necessary for successful knowledge reuse and sharing in the knowledge-intensive multi-unit law firm studied have been identified and described. They included five main functions and 24 sub-functions. These functions are proposed because for successful knowledge sharing and reuse, they should be performed by HIS. The functions have been identified and proposed according to case study data; they either are performed by HIS in the case study, and participants confirm them useful and support them, or some of them recognized the functions that need to be performed according to the data analysis. In describing the functions, usually the problems or issues that necessitated the facilitation were explained. The importance of knowledge-oriented roles returns to the importance of non IT-relevant issues in facilitating knowledge reuse which is analyzed in the discussion section.

Most of these knowledge-oriented functions should be performed by Local HIS, because performing them requires someone who has the characteristics of a Local HI such as belonging to a practice group. However a few functions can be best performed by the Central HI because performing them requires a firm-wide perspective or authority. Some of the functions also need both types of HIS involvement to be best performed. This is discussed more in section 6.4.

6.3. The Technology-Oriented Human Intermediary Role

The importance of technology-oriented HI roles in the facilitation of knowledge reuse and sharing returns to both the importance of IT as an intermediary, and the importance of HI in making IT work for knowledge reuse and sharing. In this regard, HIS enable IT (which is a passive intermediary) for the facilitation. In other words, merely installing KMSs and IT tools does not guarantee knowledge reuse and sharing
success. They need to be carefully designed, managed and maintained with appropriate functions of HIs. In this section, supporting evidence about the importance and need for technology-oriented roles or a technology-oriented type of HI is presented. These functions facilitate knowledge reuse and sharing by providing technology and making possible its usage as stated by two KM team members:

I have a role, sort of less directly to do with lawyers but ... try to improve the way technology quickly delivers knowledge to lawyers ... also looking at the information design of Intranets, analyzing the use that can be improved.

I think that we have quite a large role in sharing and the reason why I say that is because we often provide the means to which they can do it, [such as] creating a database, telling that the database is there giving them an Intranet solution things like that.

In this section, seven main technology-oriented functions with 14 sub-functions are proposed and described according to the case study data. Table 6.2 lists them.

**Table 6.2. Technology-oriented human intermediary functions**

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6.3.1. Introducing, designing and implementing KMSs and IT tools

Providing and implementing IT systems and tools is the first step in utilizing IT for KM purposes, including knowledge sharing and reuse. The HIs need to perform the following functions for successful facilitation of knowledge reuse and sharing. These functions can best be done by the Central HI as was the case in the firm studied because of certain characteristics (explained in chapter five). However the Local HI also should transfer the IT-relevant needs of practice groups to the Central HI. As was explained in the previous chapter, generally the IT infrastructure and systems are implemented for the whole organization, not just for a special group. Therefore, a firm-wide intermediary is needed. Also users, regardless of their group affiliation, require better and easier KMSs and KM tools for knowledge sharing and reuse.

(1) Finding the knowledge reuse and sharing facilitation needs and technical solutions

IT has great potential and capacity to facilitate knowledge sharing and reuse. To apply IT for the facilitation, HIs should first understand the organization’s context and the knowledge needs of the staff. Then they should examine which IT systems or tools can be used:

[The role of the KM team is] probably to understand the issues around or difficulties around knowledge sharing and contributing at the practical level, at the team level, and trying to resolve those to come up with the best solutions from the firm perspectives.

So technology-oriented HIs may not facilitate daily knowledge sharing and reuse processes but, by finding technical solutions, they can improve the facilitation: “My role in the firm is the KM consultant so I look at technical solutions, implementing technical solutions for the KM, so we work quite closely with the technology division”.

(2) Providing the IT and network infrastructure, and protection for knowledge

After understanding the KM needs and evaluating the technical solutions that can be applied to address these needs, the ICT infrastructure should be implemented to support the KMSs and tools. So the Central HI with the IT department of the organization provides, install and monitor the physical hardware, network and software. Any problem in the infrastructure disturbs the process of the knowledge reuse and sharing: “for some reason we drop the connection …, I feel quite useless without it”. Especially the IT infrastructure is important for a large firm because it connects the whole firm together:
I don’t know whether they [KM team] can actively facilitate knowledge sharing on a day-to-day perspectives; that is the big ask for them to doing that, what they can do is make sure that the infrastructure is in place to allow that happen.

HIs also should consider protecting organizational knowledge and security issues. The application of technology, particularly for knowledge, sometimes is associated with threats such as security and disturbance. So another role of the technology-oriented HI is to ensure having appropriate security and redundancy systems. The leakage of knowledge outside the organization may lead to loss of competitive advantages. So HIs should devise ways to protect the intellectual property of the firm:

[The] firm is very protective [of] its own precedents and knowledge, a lot of time and money have been spent to putting these things up together, they don’t want [when] each employee has left the firm, just download everything.

One of the threats is unauthorized usage of the firm’s knowledge, thus the system should be designed in a way to prevent this issue. This is a concern of the top managers, IT and KM department: “IT people concern is... hacking...gaining access to our documents thing like that ... by outside people, maybe partners have concern”.

Although protecting the systems is necessary, technology-oriented HIs should not pose too much limitation such as many proxies or difficult and frequent authentication mechanisms which may lead to difficulty in using the technology: “there are a few firewalls, so there are some sites you cannot access, it is a bit frustrating but not very often”.

(3) Providing KMSs and IT tools for knowledge reuse and sharing

Another function of HIs is introducing and implementing the KM-specific systems and tools. Two interviewees describe this function which is performed by Central HIs:

The KM team is charged with responsibility for figuring out the best method that [is] available to the firm whether it be developing new electronic databases, whether it be in recommending that the firm subscribe to existing services.

My day-to-day activities [are] things like researching external vendor products, things like search engines, knowledge platforms like Intranet platforms share point, any new technologies ... video streaming, a lots of word technologies, so research is a portion of my role; also there is hands on infrastructure or technical stuff so like being an Intranet developer that sort of things.

So, mainly in technology-oriented functions, the HI indirectly facilitates knowledge reuse and sharing through IT: “…we don’t really share through KM people our
knowledge: rather they just give us stuff that we need [infrastructure, databases, and technical support]."

As mentioned in chapter four, facilitation technologies can be divided into IT-based KMSs, and IT-based KM tools. One of the main functions of the technology-oriented HI is to design and implement IT-based systems to facilitate knowledge capturing, sharing, storing, retrieving and reusing. These systems were described previously in the case description; they range from knowledge databases to public internet. In addition to the KMSs, the technology-oriented HI finds, introduces and implements collaboration and social networking technologies to facilitate knowledge sharing such as electronic discussion boards or e-rooms, and new technologies such as Wikis (which is elaborated in the next function). The importance of KMSs and IT tools such as email alerts for distributing knowledge are emphasized by users.

Along with the constant advancement and innovation in IT, it is an ongoing task of the HI to look at IT, at what is around and what the organization can improve on, as the KM team in the firm studied try to do. Technology-oriented HIs can facilitate knowledge reuse in many ways by implementing IT-based advance systems. For example, in the case of updating precedents, the KM team has set up an automatic update system for precedents by just answering some questions rather than manually going and changing content.

(4) Providing communication and social networking technology

HIs should always consider developing new methods of improving and facilitating knowledge sharing and reuse. New IT tools such as social networking technologies are effective for knowledge exchange. The HI should recognize and implement them according to the needs of the firm and users. They are various and range from discussion boards, e-rooms, blogs to wikis; for example. Currently in the case study, the KM department is experimenting these technologies by implementing some of them as pilots in some divisions. They enable fast and even instant knowledge sharing, although as data indicate application of them for knowledge sharing is limited to the time that users spend on sharing which is a real challenge of a knowledge-intensive firm. HIs play important roles in creating and setting up the technologies like wikis:

We [KM team] very heavily involved in wiki and now running pilot [wiki] where lawyers contribute ..., our librarians could go in and research and also we run a KM wiki in which we share our own awareness sort of issues (More in Appendix E.50).

Designing and providing 'yellow pages” or skills directory systems enable the experts to connect together, and facilitate especially tacit knowledge exchange. A well-developed system containing all knowledge workers’ profiles help users to
know “who knows what”. In the firm studied, which is a large firm with many employees, this is regarded an important initiation in the facilitation process. As discussed in the section on knowledge-oriented roles, the input, process and maintenance of such systems is a knowledge-oriented role, but the technology-oriented HI designs and runs technically. So in this function both the Local HI and the Central HI should be involved.

Not all types of knowledge can be shared through contributing to KMSs. So another function of the technology-oriented HI is to find technical facilitators for experts’ internal communication and collaboration to exchange knowledge, which is regarded as a valuable role by a KM member:

I think [we] provide high-value knowledge through advice regarding communication and collaboration and the reason why I say that is because a lot of the times we create solutions for the lawyers on how to communicate with each other [via] internal communication.

There are some communication tools for facilitating exchange of knowledge. The more popular and used one is email, as one of the interviewees says, “every thing is done by email”. Moreover, other tools such as video and tele-conferencing tools are useful especially in a large organization: “we have a lot of tele-conferences depending on what group, sometimes we have a [firm-wide] group set up”.

The data show that due to the importance of good staff communication, for exchange of knowledge in geographically separate branches and divisions, the technology-oriented HI is required for better knowledge sharing and reuse; as a lawyer commented:“...that would be excellent if we had [sharing knowledge among branches] and we got the capability we just need to put in place”.

With new working environments and conditions such as virtual organizations, IT communication tools are more needed because in some organizations, including the firm in this study, some work is conducted from home or with clients’ organizations. So advanced communication and network facilities provide knowledge for experts and facilitate knowledge sharing. Moreover, HIs can facilitate the process of the communication between the experts and clients, and getting knowledge from clients by communication technologies such as the use of e-rooms in the case study (Appendix E.50).

6.3.2. Running and maintaining the KMSs and KM tools

Generally the technical responsibility for running and maintaining the KMSs is a technology-oriented function of the Central HI. Actually, the main output of their work is having appropriate systems up and running, and indirectly facilitating knowledge sharing through developing the KMSs as the interviewees believed.
HIs should carefully maintain them by applying necessary changes and upgrading the systems hardware, software and networks. For example, one of the duties of the KM consultants in the case is developing and recommending KM projects to KM managers and implementing them. Since the systems gradually expand and grow in size and numbers, they should make sure that the systems and their relevant processes are running correctly and have the capacity to meet the organization’s needs. Because IT is constantly developing, KMSs need constant checking, updating and upgrading as was case in the firm studied (Appendix E.51).

Keeping the KMSs running is a central role for technology-oriented HIs, especially in situations in which users rely on the systems for getting knowledge. Some examples in the case indicate that most of the work is now done by technology and without it they cannot work (Appendix E.51). To accomplish this function, The KM department may not be specialized in IT, but should understand at least fundamental IT skills such as the basic coding, and also they should have a good relationship with the IT department of the organization to accomplish this function well (Appendix E.51).

6.3.3. Facilitating easy application of KMSs (better design and customizing)

This section describes important technology-oriented functions that the Central HI can and should do to make the technology easy, simple, and applicable for knowledge sharing and reuse. This function includes six sub-functions.

(1) Improving better usage of technology for users

It is not enough to have just a knowledge repository; there is a need to make it easy to use and easy to contribute. One of the main roles of HI is to provide appropriate design features for KMSs to enable users to find and share knowledge easily. For example, these features may automatically sort and categorize the content of the systems.

To be able to increase technology usability in an organization, there is a need for constant and productive communications between users and HI. To customize the KMSs and make them easy to use, technology-oriented HI should monitor and examine the usage of the IT and get feedback to understand users’ behaviors and ideas to adjust the KMSs or provide new systems or features:

From [a] KM perspective, we look at how people would use that technology, what sort of behaviors and cultures... for example, when we design our navigation we look at the usage and also survey them (More in Appendix E. 52).
Users would be encouraged to use KMSs for contributing to or retrieving knowledge from systems which are user-friendly, not ambiguous, and not time-consuming. Although to have a system easy to use, the solution is not just technical, technology-oriented HIs can improve the design features of the KMSs:

A big part of my role is to try to improve the way technology quickly delivers knowledge to lawyers; so I will be involved, do like tuning and finding new search engine that sort of thing, also looking at the information design of Intranets, analyzing the use that can be improved. I had [a] role... in designing of the global navigation.

Thus, the Central HI with technology-oriented roles indirectly and technically facilitates knowledge sharing and reuse by constantly improving the searching facility, navigation system and design of the KMSs. Moreover, as one of the users says the KM team “has got the role of customizing those things in certain ways” to match the systems with users’ needs and convenience:

[The] technology [department] implement[s] the platforms, we operationalize it, so we customize it suited to the lawyers need, train them, publicize it, test it, trying to get statistics and results on use and try, sort of, how useful [it] is and then make recommendation back to the head of technology and KM.

One of the ways to ensure the easy application of IT is pilot testing new tools or systems, for instance, first in just a few units and, then monitoring the application and consequently revising and improving before firm-wide implementation. This was the case in the firm.

(2) Making contributions to KMSs easy

Because usually contributing knowledge is voluntary, if the process and method of contributing to KMSs and uploading is not simple, then the amount of contribution will be reduced. Many of the interviewees believe that one of the main problems of knowledge contribution is the difficulty of using KMSs due to the complexity of IT around them. So, if technology is not advanced and easy to use, lawyers will be reluctant to contribute to KMSs, or they may prefer to share directly just with some people and not with the whole organization. In this situation, time-poor knowledge workers may not contribute because they have to spend time in more training and learning the complex technology, as well as spending more time on a matter that may not have direct and immediate benefit for them. Sometimes, knowledge holders get assistance from others mainly because of the IT around the contribution process. Many interviewees mentioned the difficulty of technology application as a main problem of knowledge contribution:

Unfortunately the IT around the database is not easy to navigate; they would need specific training and we want [to] make it easiest possible, this is something
else they need to learn to do then it would never happen (More in Appendix: E.53).

Therefore, knowledge contribution to KMSs and the procedures should be transparent and easy to learn. The HI can provide simple ways of contributing and uploading such as providing a transaction map for people as some interviewees in this research recommended. Although the problem of knowledge sharing and contribution is not all technical, it can be improved “with the platforms, just making it easier to contribute”.

(3) Making knowledge-finding easy (technically improving knowledge presentation in KMSs)

IT can be used to improve better presentation of knowledge in the KMSs. HIs should design the KMSs in a way that as far as possible automatically categorize, index, or sort the content, such as a facility that categorizes the content based on the subject or keyword entry. Moreover, The HI should review the content of the systems from an IT perspective to ensure that the different parts of the systems work well and knowledge is presented appropriately:

[Part of my role is] information management. I guess looking at how we present the information on the Intranet, mainly the tools, what information they need to have access to, just improvement of the presentation of the knowledge and so on, so mainly from technical point of view (More in Appendix E.54).

(4) Making KMSs user-friendly

There should be many features in the system to make it user-friendly. One of the interviewees in the firm who was working in the IT department said there were three specifications for a user friendly system: “easy navigation, less clicks, and relevant to their [users] needs”. Also he believes that: “Any good IT system should be something that IT builds, hands to them and never has touch again”. So the system should be designed very well at the outset. However, due to constant advancement in IT, it seems that it is required to review and improve the systems and tools often. Also a user-friendly system is a system that makes the users contented and motivated to use it because it is quick, it does not need too many clicks, and it is as simple as possible. Complexity of KMSs discourages users, as one of the lawyers said, that one of the two main roles of the KM team is to simplify the process and technology: “...it is twofold, needs to be KM in training and perhaps simplifying the process because it seems innately complex”.

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(5) Integrating KMSs into simple, single or few platforms

One of the problems in applying IT to knowledge sharing and reuse is the existence of many and different KMSs or tools. HIIs should facilitate easy usage of KMSs by integrating and consolidating them into a single or few platforms of KMSs. Usually in organizations, especially in a large firm, over time different systems with different purposes in different parts of the firm have been developed. This legacy system after a while becomes a problem, because once users realize that for knowledge sharing and reuse they have to deal with several, and sometimes confusing, different systems, they become reluctant to use IT:

What I find is, there are many different sources of information so I would like in ideal … to be able to go one Intranet or one source that will be able to access all the various sources in one go. because it goes back to the time so you have to ask yourself ok well which electronic resource is going to best provide me with the information on looking for whether it be. …I think if all the platforms could be integrated that would be fantastic.

As this interviewee said, the solution is to have simple and possibly a single system. Another advantage of this integration is the reduction of the need and burden of learning different technologies and KMSs; especially since such learning is not the users’ main area of specialty: “I think that we have to stop to giving people 20 different things to learn” (More in Appendix E.55). Although in the case of multiple systems, a search engine is helpful, users believe that there is still a need to integrate the systems down to fewer ones. There are different ways to integrate the systems; one of the ways which is going to be used in the case study firm is SharePoint technology (see Appendix E.55).

(6) Improving search facility

One of the ways that technology can play a big role in facilitating knowledge reuse and sharing is through a search facility which increases knowledge reusability. So another role of HI is providing an advanced and high-quality searching system to enable users to search quite easily and quickly. The lack of a good search facility was one of the main concerns of the users in the case study (Appendix E.56).

A poor search facility and result makes users disappointed and thus unwilling to use KMSs because if they can not find the knowledge they need easily and quickly, they would regard the KMSs to be inappropriate for contributing knowledge. Due to the existence of different KMSs, in addition to some external databases, the users expect to search the repositories all at once, not one by one. Because integration of the KMSs always is not possible, an advanced search facility is the next best solution (Appendix E.56).
It is not enough just to provide advanced searching technology, but the HI needs to tune it as a way of improving knowledge reuse and sharing. Users need to understand the language and the terminology of the experts' keywords and synonyms to be able to get the best results from a search (see Appendix E.56).

Some part of this function is knowledge-oriented because it needs knowledge related to the area of practice and the behavior of the users. So, both the Local HI and the Central HI should be involved. A searching system is important; through advanced, quick and easy-to-use search engines, lawyers can find knowledge easily by themselves and the amount of time getting help from research librarians (HIs) will be decreased.

6.3.4. Training users in application of KMSs and KM Tools

Users sometimes do not know how to use the KMSs to contribute or retrieve knowledge. Sometimes new technology is introduced to the organization or new features are implemented in KMSs which need to be taught to users. So training and supporting users technically is another significant technology-oriented function which is done by the KM team:

We have presentations in particular practice group, ... must be always to be able to present toward, to be able to train, to be always available for their concerns and to be as flexible and service-oriented as we possibly can.

Training on the application of KMSs and KM tools usually are of two types: first, training new staff on how to locate knowledge and information in the systems and how to use them; second, refresh training or retraining of staff because there may be new systems or new features in the systems. These two types were evident in the case which is done usually by KM team. (see Appendix E.57).

As data from this study show, the Central HI trains users through seminars and presentations to group of users, as well as individual training and helping users in technology application through the helpdesk services. Users need to know, for example, how to contribute knowledge to the systems (procedures, and systems features); how to easily search and find knowledge; and learn about new products and features of the systems. Based on the data (Appendix E.57) training and providing advice on technology application is a major role of Central HI. Training should be effective and constant due to continuous improvements in IT; the Central HI should investigate the training needs of the staff, and devise the best approach for training, especially for voluntary jobs like sharing knowledge:

[It is not an easy task to contribute] and I have forgotten how to do it, so complex, ..., perhaps if we had some know-how produced, say some laminated form of step by step process we just have by our computer, because the problem with training in this firm is sometimes that you get whole bunch of PowerPoint
and all they go on a file and like there, then we come around to uploading, if the secretary doesn’t know, you don’t do it; that is fundamentally what happens unfortunately and I am guilty of that, but so if there is a simplified process and there was advertising of how to do it I think it will be much more beneficial.

Sometimes informal training through contacting with users in their work sites is more useful as the data show. KM people, especially when new tools are introduced, visit practice groups to introduce new tools or systems because otherwise only new staff who participate in training sessions would learn: “what we also trying to do is make sure that we go informally basis and tell them [about] a particular product, how to use it and give them some training”. The Central HI in this role not only trains users, but also trains and support the Local HI: the KM team has support groups which support the coordinator with technical assistants …it is mostly technical and process-driven, the advice that we give”.

Furthermore, training and improving IT literacy before training in application of KMSs is required. The HI needs to ensure that users have basic IT skills. Despite the new generation born in the information age, some people (but more particularly the older staff) have problems learning and using IT, and that may lead to fear of technology (see Appendix E.57).

6.3.5. Advertising and informing about KMSs and IT tools

One of the problems in knowledge sharing and reuse facilitation is the lack of awareness of the users about the KMSs and IT-tools, and their ability to facilitate their work. Usually knowledge workers are very busy, especially in a law firm; they may not know what is going around them regarding knowledge reuse, or they may not know how the IT-based systems or tools can improve their performance and even their future. According to the data in this research, some personnel do not know how to access information, and do not know that the knowledge is available. Therefore, informing and making users aware of KMSs and tools is an important function of the Central HI: “just importantly make them aware... lawyers are so busy ...they don’t get a chance to really see what is going on outside the area of expertise”. This was evident in the case study; for example, I asked a lawyer whether he uses the KMS, he said even he was not aware of the system and its content: “no, the reason that I don’t use it, is I really don’t know what is in it” (More in Appendix E.58).

Just training and informing users may not be the solution; HIs, mainly the Central HI, should make them realize the value of the KMSs and show the result of their application. As many interviewees confirmed (Appendix: E.58), one of the function of the HI is advertising the KMSs and tools and KM services to the whole firm. There are different ways to advertise such as running awareness sessions, having frequent contact with groups like attending their meetings, issuing publications and sending email alerts, and even going to workplace units to give informal information:
"I go out and visit groups and run awareness sessions about some of the technical resources that we have which they can use, [as] KM solutions”.

6.3.6. Performing helpdesk services

Another function of the HI is supporting application of KMSs tools by providing continuous helpdesk services. In the case study, the firm-wide helpdesk services are provided by the Central HI. There are two helpdesk services: technology helpdesk and KM helpdesk. The technology one deals with just technical problems; the KM helpdesk provide users with both KM technology-oriented and knowledge-oriented services. In terms of the technology, HISs guide users on things such as how to use the systems or tools for finding or sharing knowledge; and generally offer “technical and process-driven advice” services. They support the technical needs of staff and ensure that the KMSs and KM tools are working properly and satisfy the needs of users:

My role has a number of different dimensions; it started as a helpdesk role so supporting the technical needs of the practice in terms of making sure that electronic library tools and so on are presented well and be accessed and worked and so on.

One of the very important services of the KM helpdesk is providing individual research for users through librarians. They have different backgrounds and skills and provide services to lawyers such as explaining the different databases, general library information, responding to research questions, and providing technical information (Appendix E.59). Also, they have a special KM Intranet which offers research tools and technology advice.

They call my team, so the people who help manage the Intranet and wikis and things like that when they are looking for something in particular. So a lot of time if lawyers working for a particular client ...have to solve the problem [and]... don’t know where [to] start looking, so they look online and the first place they call is us and we in turn facilitate and direct them into the right direction like where they should be going to the Intranet where they should go to KDB, etc.

6.3.7. Helping users technically in KMSs and tools

In addition to providing KMSs and tools and training users, the HI facilitates knowledge reuse and sharing by assisting users in the application of them. According to the data, users mainly need technical assistance in following areas: creating knowledge documents (precedents) and uploading to the systems; contributing knowledge to KMSs and updating contents of KMSs; capturing knowledge; finding and receiving knowledge from sources.
(1) Assisting in precedent development and uploading

As explained before, one important form of facilitating knowledge reuse in a law firm is precedent development and documenting. Precedent creation and updating, come under the knowledge-oriented function of the Local HI, but also require technical skills. So a technology-oriented HI also facilitates and supports the formation and updating of precedents by actually assisting in its development. In the case study, there is a precedent team in the KM department who support users technically in this regard.

Precedent consultants in the KM team help lawyers maintain and update precedents and assist them in uploading new precedents to the database. They get queries to upload and change content from all divisions, and sometimes lawyers provide them with the documentation; and the team formulates the precedent and uploads it: “[KM team] would facilitate or assist with certainly precedent development; that is more from a technology perspective rather than from the content”. The KM department is responsible for the precedent database technically, but the lawyers and Local HI are responsible for its content.

(2) Assisting in contribution to KMSs and updating them

As mentioned, contributing to KMSs and updating its content are associated with some technical issues and require learning some skills which may discourage people. Moreover, sometimes it is not reasonable or possible for lawyers to learn all the technical skills. In these situations, the HI plays an important role by assisting them in the contribution process: “definitely if I wanted to upload any things I would go to them [librarians] because she knows how to do it …”.

HIs reduce the burden and time of contributing by entering or uploading the documents to the systems and doing any technical changes for updating. But this assistance is not just the role of the Central HI; mostly secretaries or clerks who may be trained by the Central HI do that as well. They not only have the technical ability to upload the contribution, but also know better the KMSs, the location and the categorization of the content there: “I do Intranet tasks so I help people update their Intranet and I advise on where and how to put information online for the team”.

(3) Assisting capturing and searching knowledge

To facilitate knowledge reuse, technology-oriented HIs have the important role of assisting in capturing knowledge and retaining corporate memory by means of IT. HIs in a technology-oriented role have secondary role, i.e. extending technical help to users or to the Local HI in capturing knowledge. For example, in the case, there is initiative to film the valuable presentations or seminars about clients, the industry or any other knowledge areas. The Central HI captures these types of knowledge and
make it available to the whole organization through the firm’s Intranet; this is considered high-value for the firm: “one of our people [KM team] functions is to video tape presentations and they get put on to the Intranet and I guess [you could] consider that is quite high value”.

Another occasion in which the technical ability and skills of the technology-oriented HI is needed is when experts in the firm are looking for a type of knowledge in KMSs that is hard to find. This role is both technology-oriented and knowledge-oriented, because it needs technical ability to find knowledge for users in KMSs; also it needs some specialized knowledge, as previously discussed in this chapter.

6.3.8. Summary of technology-oriented HI type and functions

Section 6.3 listed and explained briefly the technology-oriented functions of HI based on the case study analysis. It suggested and argued that to facilitate knowledge sharing and reuse, technology-oriented HIS should perform seven functions with 14 sub-functions. Because these functions are IT-relevant, they can be performed best by the Central HI. But due to the interrelation of these roles with some knowledge-oriented roles, coordination with the Local HI in performing these functions is necessary. Some technology-oriented functions have some knowledge-oriented aspects. Therefore, sometimes there is no clear distinction between these two types, although mostly the differences between them are apparent.

6.4. Discussion

According to the case study findings in this chapter, for successful knowledge reuse and sharing, two types of roles need to be performed by HIS: knowledge-oriented and technology-oriented. These roles and functions are developed based on the case study data by analysing the requirements of better facilitation of knowledge sharing and reuse.

Our finding in this chapter can be interpreted in two ways. One perspective regards knowledge-oriented and technology-oriented categorizations as two types of HI; other one as two types of roles for HI.

1. Types of HI perspective

In this perspective this study suggests that to have successful knowledge reuse and sharing, a knowledge-intensive multi-unit organization needs to have both types of HI: knowledge-oriented and technology-oriented HI, because they perform different roles in the facilitation processes. In the initial framework we identified these two types; the case study also confirms this. Identifying and differentiating between these two different sets of functions is the justification of this categorization.
This is another typology or categorization of HI which is based on the HIs' roles; comparing with the location-oriented categorization of HIs which was developed in chapter five.

Therefore, because this taxonomy confirms and describes two other types of HI, it partly answers the first research question which intends to clarify the HI, although from a different perspective. In this perspective HI are divided into two types: HI who performs technology-oriented roles, and HI who performs knowledge-oriented roles.

This categorization makes sense because the natures of these roles are different, and differentiating them gives more insight on the process of facilitating knowledge sharing and reuse. To avoid overestimating or underestimating either of them these differences should be realized, because both together are necessary.

2. Types of HIs' roles perspective

Identifying HI is not enough; it is required to know how they can or should facilitate knowledge reuse and sharing. This chapter introduced and briefly explained a quite comprehensive list of the functions in this regard (answering the second research question). The functions are divided into two main categories: knowledge-oriented roles, and technology-oriented roles. In this perspective we argue that to have successful knowledge reuse and sharing, HIs need to perform these two types of roles.

Furthermore, in chapter two which covers the initial framework, we developed a list of functions for HIs, but that was based on intermediaries' studies in many areas. But here the more detailed, and precise functions with brief explanations of why they are necessary have been developed based on data. Here also they are differentiated and categorized into two main roles. These two lists are compared in the next section.

It should be mentioned that some functions might not be purely knowledge-oriented or technology-oriented; some of the functions have two sides and in most cases IT is involved; but in many functions the involvement of IT or knowledge-oriented part of function is marginalized, and one aspect is more dominant.

3. Justifying the taxonomy

Because of the different functions that HIs with knowledge-oriented roles perform and the different characteristics and skills that this intermediary has, its differentiation from technology-oriented HIs helps us to understand better the appropriate intermediation of knowledge reuse and sharing. According to the data, the existence and the performance of both roles in the case were evident.
The need for technology-oriented HI roles in the facilitation of knowledge reuse and sharing returns to both the need for IT as an important intermediary and HIs for facilitating its applications. HIs, by performing technology-oriented roles, enable IT for the facilitation. So the need for these roles is clear. Lack of ability of sole technology for intermediating better knowledge sharing and reuse lead us to appreciate the knowledge-oriented HI.

There may be an assumption that having KMSs and IT tools in an organization guarantees the improvement of knowledge sharing and reuse. Although the technology is useful and a necessary enabler of knowledge sharing and reuse, the data from this research strongly reject this assumption and confirm that technology by itself is not the answer to better knowledge reuse and sharing. In the case study firm, somehow the best technology has been implemented but the users believe that “the cutting-edge technology is not answer”. As an example a user said:

No, it [technology] can facilitate and make it [knowledge sharing and reuse] easier but I don‘t know if [it] can improve it, I don‘t think technology can drive the sharing of knowledge, it can make it easier but unless [the] culture is there, you can have the best technology but it won‘t work,... it is not an IT issue or systems issues, it is a cultural issue” (More in Appendix E.60).

Therefore, to have successful knowledge reuse and sharing, implementing technologies is not enough; furthermore the sole existence of technology-oriented HIs does not help to achieve successful knowledge reuse and sharing. Knowledge-oriented roles need to be performed to complement the facilitation.

4. Appropriate HI for the facilitation functions

Moreover, this chapter links two types of typologies, location-oriented and role-oriented, by indicating which function is better performed by which location-oriented HI. Almost all of technology-oriented roles should be done by the Central HIs or KM department and a majority of knowledge-oriented HI roles can be best done by Local HIs (see Figure 6.1). This is because the unique characteristics of these two types enable them to perform those functions better. Although for some functions there may be overlap, or may need to be mutually performed, nevertheless each function is better performed by one or the other. Figure 6.2 indicate that each function may have more or less both knowledge-oriented and technology oriented aspects; so, can be seen in a continuum. The more technology-oriented the function, the more likely to be better performed by Central HIs, the more knowledge-oriented the function, the more likely to be performed by Local HIs.
Figure 6.1. Relationship of two typologies, or combination of different types and roles of HIs

<table>
<thead>
<tr>
<th>Location-oriented Typology</th>
<th>Role-oriented Typology</th>
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</thead>
<tbody>
<tr>
<td>Central HI</td>
<td>Local HI</td>
</tr>
<tr>
<td>Technology-oriented Roles</td>
<td></td>
</tr>
<tr>
<td>Knowledge-oriented Roles</td>
<td></td>
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</tbody>
</table>

Figure 6.2. Relationship of two typologies, with different illustration

The last column of Table 6.1, in the beginning of the chapter, shows the assignment of the knowledge-oriented functions to the appropriate HIs; the HI that appears the first in the column have major role in that function. Assigning roles to each type of HI may not be fixed or straightforward, for many reasons, such as the formal assignment of part of roles to different people based on the organization’s need. So this general allocation of HI to the roles should be matched with the organization’s own specific conditions.
5. Comparison with the initial list of functions

Although the most of the functions developed here are not new, differentiating and categorizing them (or types of HIs) into two types is a new idea introduced in this study. Presenting them for HI or looking to them from the intermediary perspective, classifying them into two types, providing a comprehensive list based on the practical case study, and suggesting appropriate HIs for them is the contribution of this study to current KM research. They are all found important for successful knowledge sharing and reuse. Even differentiating between these two types of roles is important because it indicates the significance of both that cannot be ignored.

The initial framework, discussed in chapter two, proposed these two types of HIs for successful knowledge reuse and sharing, and the results from the case study confirm these two types to be a workable model, although it is better to regard the types as HI roles more than as types of HIs.

In the conceptual framework formulated from the literature review, we proposed a list of functions for HIs. Here we compared them with the findings in this chapter. Some of the functions actually found in the case study research were not in that list. Some functions that were significant in case study had not been given enough attention before.

The new and important knowledge-oriented functions for facilitating knowledge reuse and sharing that were found in this case study are:

- Organizing and running learning seminars or team meetings for knowledge sharing and reuse;
- Researching and providing knowledge for users individually; and
- Coordinating and collaborating of KM issues and intermediation with all parties.

The new and important technology-oriented HI functions found in the case study are:

- Integrating KMSs into simple single or few platforms (as much as possible);
- Providing and improving appropriate search facility; and
- Advertising and informing about the KMSs and IT tools.

The following list also contains the functions that were found important in the case study but were not emphasized in the initial functions of HIs in chapter two:

- Promoting and reminding knowledge sharing and reuse;
- Facilitating the creation of appropriate working environment for KM activities;
- Initiating and facilitating social events;
- Introducing sources of knowledge outside and inside the firm;
• Helping knowledge holders to contribute;
• Performing library and subscription work;
• Performing knowledge work on KMSs (improving the usability and usefulness of KMSs);
• Performing helpdesk services; and
• Providing communication and social networking technology such as wiki.

It should be mentioned that almost all of the functions which were identified in the conceptual framework have been found in the case as well. Some of them were described here by different titles or categorizations.

6. Discussion of the findings in the literature

In the literature review, this researcher found little or no comprehensive and practical list of functions for HIs in facilitating knowledge reuse and sharing. For example, Markus (2001) pointed out some roles of intermediaries but these are relevant mostly to explicit knowledge reuse facilitation regarding KMSs.

Other studies focused simply on some part of the facilitation and present a short-list of HI roles. For example, Jones et al. (2003) listed some of the intermediary roles which are part of knowledge-oriented and technology-oriented roles. Roth (2003) listed five roles for knowledge facilitators which are included in the knowledge-oriented functions of this study. But he did not consider facilitation roles related to IT-based KMSs and KM tools.

One of the contributions from our study is developing practical lists of functions for KM practitioners or HIs. Southon et al. (2002) stated that the role of informational professionals in many respects is problematic and marginal to their main activities. The researcher also believes that KM practitioners in a knowledge-intensive multi-unit organization have the same conditions, so, our study has clarified to a greater extent their roles by identifying and establishing appropriate roles and detail functions for them.

The roles of the human agent in relation to IT and the facilitation of knowledge reuse and sharing have been considered by other researchers. As mentioned previously, the technical intermediary needs support and administration from the HI. There are many functions in the knowledge-oriented and technology-oriented list describing and covering the HI functions in relation to KMSs and KM tools. Previous studies usually focused on one or a few of these functions, but in our study, as much as possible all important functions are identified and explained. In this section some of them are discussed.

Some of the technology-oriented and knowledge-oriented functions of HI are about facilitating the application of KMSs and KM tools for collaboration. Other studies
investigated this facilitation; for example, Dickson et al. (1993) studied the role of the facilitator in a group decision-making support system (GDSS) and examined the role of two kinds of facilitators: chauffeur-driven and facilitator-driven. In chauffeur-driven facilitation, an intermediary is used to lessen the mystique of the GDSS technology for users, while, in facilitator-driven facilitation, he/she assists the group with its group process as well as reducing the mystique of the technology. The result of their study indicated that the existence of either of these lead to better performance of the group than through the user-driven operation of a GDSS. This study similarly found two types of HI: a Central HI who, like the facilitator in chauffeur-driven GDSS, mostly performs technology-relevant roles; and Local HI s like in facilitator-driven GDSS, who mostly perform non-technology relevant roles.

The difference that this study distinguishes from Dickson et al. (1993) is twofold: first, we considered various types of technology systems and tools, not just one system; second, we covered a broader range of possible roles for facilitators, not just on lessening the mystique of technology or assisting in group processing. However, we have confirmed, and to some extent addressed, the argument in Dickson et al. (1993) that the facilitation is a complex process, and must be adaptive rather than restrictive, by proposing different intermediary types and roles.

In this respect, Yoong and Gallupe (2002) have explored the facilitators' role of planning and designing of face-to-face electronic meetings, which increases the external and internal coherence of the meetings. Facilitator's functions in this regard include activities such as linking the meeting with the bigger picture, keeping every one up with the play, match making, and walking through the agenda. These functions are similar to the second knowledge-oriented function of Local HI s namely 'providing tacit and direct knowledge sharing facilities and settings' in which the HI organize learning seminars or team meetings and facilitate knowledge generation.

Moreover Pauleen and Yoong (2001) studied the importance of the facilitators' role in building and maintaining the online relationships between team members in virtual teams. Although this study did not particularly focus on this role, the HI's function in terms of 'providing network facility and "yellow page" directory to connect experts', and 'initiating and facilitating social events' are attempts to build a relationship among the knowledge workers. We found knowledge work on KMSs as an important HI function, which also has been considered by previous researchers. For example, Markus (2001) argued that, for successful knowledge reuse, the HI s role is necessary to re-purpose the repositories developed by knowledge producers to make them useable by others. She argued that to prevent failure of KMS, expert intervention is necessary. Because produced knowledge may not generally be immediately useable by others, organizational work by intermediaries is necessary to develop local knowledge for wider use. This study similarly confirms this and have found and assigned several knowledge-oriented roles to a special type of HI, namely the Local HI, to make the knowledge in the systems easily useable. Moreover, we go one step
further and have considered the role of turning low-value knowledge in the systems to high-value, as well as assigning appropriate HI for this type of role. Therefore, the Local HI, by performing knowledge-oriented roles, contributes greatly to explicit knowledge and KMSs delivery.

6.5. Summary

This chapter reports the findings of the case study in terms of HI typology and HI roles and functions for better or successful knowledge sharing and reuse. It identifies and shows that two types of HIs, namely knowledge-oriented HI and technology-oriented HI, are necessary to perform the facilitation and intermediation roles. HIs are divided to these two major types because of their differences in terms of their nature, orientation, focus, and functions or roles in the intermediation processes. Recognizing different knowledge-oriented and technology-oriented functions is the justification of this typology. The idea behind this typology is to indicate that recognizing, differentiating and appreciating these two different streams in intermediation is helpful and insightful for an organization to have successful knowledge reuse and sharing.

But more importantly, this chapter’s purpose and contribution is answering the second research questions at the same time. To know “how HIs can improve more and better knowledge sharing and reuse”, it identified and described a relatively competitive list of roles or functions for HIs. These functions were divided into two major roles: knowledge-oriented HI roles, and technology-oriented HI roles. Each of these two types of roles included a list of functions. The distinction of these functions is not very clear-cut, for example, many of the technology-oriented functions have a knowledge-oriented aspect as well.

This role-oriented typology, which was identified by analyzing the literature review, has been confirmed by our findings from the practical case study. This typology is regarded and treated both as ‘two types of HI’, and as ‘two types of HI’s roles’. Both perspectives are informative and insightful. For a large multi-unit law firm, both typologies of HI (the location-oriented that was developed in chapter five, and this chapter’s role-oriented typology) is understandable and applicable in knowledge reuse and sharing intermediation. For small organizations the location-oriented typology is not applicable, but this chapter’s typology is more helpful. So for a knowledge-intensive multi-unit law firm which was the focus of this study, we can regard the Local HI and the Central HI as a type of HI, and knowledge-oriented HI, and technology-oriented HI as more the types of major functions of HI.

This chapter also linked the findings related to the different roles of HI, with the findings from the case study in the chapter four regarding the main HI types (namely Local HI and Central HI). We argue that the technology-oriented roles should be performed by the Central HI and most of the knowledge-oriented should be
performed by Local HIs. We justified why one type of HI is preferred for a specific function. However, these differentiations are more for analyzing and better understanding, the coordination and collaboration of Local HIs with the Central HI are required for the successful performance of many functions.
INTERMEDIARIES FOR HIGH- AND LOW-VALUE KNOWLEDGE

7.1. Introduction

This chapter addresses the third research question:

3- Is there any significant difference among knowledge intermediaries in terms of the value of the knowledge that they facilitate or intermediate? (OR which intermediaries are most common or suitable for high- and low-value knowledge sharing?)

This chapter identifies and clarifies which intermediaries are (appropriate) facilitators for high- and low-value knowledge reuse and sharing. IT as an intermediary is incorporated in this part of the study because the Central HI is dependent on IT, and also investigating IT in comparison with HI for high-value knowledge provides more depth in this analysis.

The evidence is mainly qualitative data drawn from interviews; however, some quantitative data collected during interviews are presented in the form of charts, which complement and support the qualitative result. Due to the importance of high-value knowledge flow and its intermediaries, data and the arguments are mostly concentrated on this flow.

This chapter proceeds as follows: Section 7.2 explains briefly the concept of high- and low-value knowledge. Section 7.3 describes high-value knowledge reuse and sharing flows including sharing and getting knowledge. Also in this section the methods or channels of high-value knowledge reuse and sharing are identified. Section 7.4 investigates the relationship of three intermediaries (Local HI, IT, and Central HI) with high-value knowledge reuse and sharing flows. Section 7.5 describes the low-value knowledge reuse and sharing. Section 7.6 investigates their intermediaries. Section 7.7 compares the high- and low-value knowledge through charts. Section 7.8 summarizes the findings of the chapter. Section 7.9 discusses the result in the prior literature. Finally, section 7.10 summarizes the chapter.
7.2. Concept of High- and Low-value Knowledge

As discussed in chapter two, due to subjective and controversial concept and definition of high- and low-value knowledge, in this study we rely on the perceived value by interviewees for their (lawyers') work as the determinants of high- and low-value knowledge. In the introduction of the interviews the researcher explained these to interviewees.

As some interviewees expressed, the value of knowledge is subjective and thus hard to define and gain consensus, and that it depends on many factors such as the context, the need, the time, the user and many others. For example, a document may be regarded as of high value by someone but of low value by others. For this reason, relying on the perceived value of knowledge is an appropriate option.

It should be mentioned that in this study low-value knowledge does not mean knowledge that is useless; rather that the knowledge required to perform tasks may have less value in comparison with high-value knowledge that users already have and apply. It can be regarded as less processed information that is not readily applicable, while high-value knowledge is more processed information, has a context and is ready to use.

For the purpose of this study, an understanding of where and how lawyers get the knowledge that is of high or low value for them is required. We do not focus on the concept of high- and low-value knowledge. However, at the beginning of the interviews, participants were asked to define and explain their perceptions of high- and low-value knowledge. All except for one (out 15 respondents) agreed and differentiated between the two categories.

Respondents mostly regarded high-value knowledge as knowledge that is contextual and complete (has metadata or interpretation), is tacit – such as colleagues' opinion – is effective and ready to apply, reliable, current, relevant (to users' needs), and has value in monetary return. In addition, they regarded information or knowledge that is somehow explicit, tangible information without context and quality, non-relevant, easily accessible and administrative as low-value knowledge. More detailed perceptions of the participants about high- and low-value knowledge drawn from the interviews are presented in Appendix F.1.

7.3. High-value Knowledge Sharing and Reuse Flows

This section first describes the high-value knowledge flow according to qualitative and quantitative data and then further explores the high-value knowledge flow's channels.
7.3.1. Two streams

Knowledge exchange flow is twofold: sharing knowledge and getting knowledge (knowledge acquisition). In this study interviewees expressed their ideas and experiences on both aspects. Here, we attempt to understand from where and how lawyers get high-value knowledge, to which targets they aim their knowledge sharing, and how they share their knowledge. Although these streams are not distinctive, these differentiations provide the means for getting more data, and analyzing the knowledge sharing and reuse flows better. In this section these streams are described separately.

(1) Sharing high-value knowledge (directly with people)

Most knowledge sharing is of high-value knowledge. Before investigating the flow of high-value knowledge sharing, a point about general knowledge sharing should be explained. In this study, the majority of interviewees believed that knowledge sharing, to a greater extent, is high-value knowledge sharing (although it depends on the particular definition of high- and low-value knowledge). In general the interviewees thought that when people shared or contributed knowledge, this was likely to be of high value, not low, simply because people tended not to bother with low-value knowledge sharing:

I don’t really [share low-value knowledge] because to me if I classified low-value knowledge as things that [are] generally publicly available or not very detailed, I don’t share it. (Researcher: so if you share, it means that you share high value?) Respondent: yes I think we have enough low-value knowledge floating around [laughing] (More in Appendix F.2).

Moreover, knowledge sharing itself is valuable for an organization; it has many benefits such as preventing the waste of resources in re-creating everything from scratch, and also improving the firm’s financial performance as mentioned by one of the lawyers:

[Knowledge sharing is important and valuable, because] it could improve the firm from a couple of the points of view. Firstly if we do it right and can actually capture knowledge so we don’t have to recreate each time, if we are valuing that knowledge correctly then [it can] be a potential to actually make it, to deliver the commercial advantages out of that.

Directly sharing high-value knowledge with people. Almost 75 percent of the respondents believed that lawyers definitely share or preferred to share their high-value knowledge directly with people such as their colleagues and superiors individually rather than contributing to the KMSs. The other quarter of the participants also mentioned that lawyers both share their high-value knowledge directly with others and contributed to public KMSs (public here means all staff of
the firm, not the general public). There is a difference in the nature of sharing knowledge between that of sharing with someone whom you know and with whom you have a relationship, and that of contributing to a KMS that is shared with the public in which the users may not know you and you may not know them. This latter may not motivate many people to contribute especially high-value knowledge to KMSs. Usually, knowledge holders share their knowledge through interaction with their colleagues, their supervisors or subordinates, during moments of social interaction or communication in a project or transaction in which they are working together. For example, one of the lawyers said:

...word of mouth; lawyers generally share by talking to each other, although it sounds strange but we do actually talk to each other. ... you know what, lawyers don't do that they don't share stuff in a system-based way like on the Intranet; very few people I think probably do actually upload the advices to a sort of shared know-how site, they are more likely to say" ahh, I did some things on that a while ago here is the document or I direct you to the document"; that way so it is one on one rather than sharing to the public. Yea, I think it is largely because people, clients, aren't confident, you know, how far the information is going, but also confidential [for] the person who’s receiving it, so directly I prefer...it is easier just to go and talk to someone.

Participants provided many reasons why lawyers prefer to share especially high-value knowledge directly with their colleagues. Two lawyers indicated that knowledge holders share high-value knowledge directly (not through KMSs) and then explain their reasons:

I definitely share high-value knowledge more directly with colleagues than through KMSs ... because it is easier, it is less cumbersome and often it is, one of the problems ... using the database is if you got a very specific question, if the answer is out there it would be very difficult to find and often is not out there, so it can be very time-consuming, where if you know there is somebody who has that area of expertise [you] need just call them up or send them an email saying can we have a chat at X time, it is a lot more efficient ... so it is normally direct.

I think people will generally share more directly with other people rather than [use] the database just because simply it [direct contact] is easier and just more fluid; I mean, it is more natural inclination to share something with other people rather than putting it up like as an advertisement, you know, on the database; just not is natural.

More evidence from the interviews showing support for the direct knowledge sharing is presented in Appendix F.3. The reasons of sharing directly are extracted from the interviews and categorized as follows:
• it is easier – less cumbersome; contributing to KMSs does not convince everyone.

• relationship, trust, reciprocity – helps to build the relationship, networking (using the power of knowledge); rapport built with colleague, generally learn to trust and share information with certain colleagues; working together on the same transaction develops a closer relationship, trust, reciprocity and so on; it is shared with less people; confident about the information that are sharing.

• it is natural and best way and include tacit knowledge – a more natural inclination to share something; a more natural way to share; a very human sort of thing; people more happy to share verbally; the best way to get expertise on something by asking it from a colleague; the know­how is tacit knowledge and not explicitly to be systematic.

• it is high value – it is high value (its value not reduced by putting into KMSs); very valuable; important high-value stuff handed over in relationship with superiors; dealing directly with people is far more valuable than reading something on the Intranet.

• it is relevant – what that they get from their superiors expected to be very pertinent to their work.

• it is efficient; it is more fluid; it looks current.

After understanding that experts or knowledge holders share or prefer to share their high-value knowledge directly with people, for the purpose of this study, it is necessary to understand how, in which way, or which channels are applied in order to share knowledge. Table 7.1 list the lawyer’s ways of sharing high-value knowledge which are mostly the participants’ own words. (More complete quotes in Appendix F.3).

<table>
<thead>
<tr>
<th>Table 7.1. The way that participants share their high-value knowledge</th>
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<tbody>
<tr>
<td>word of mouth, lawyers generally share by talking to each other,</td>
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<tr>
<td>to certain extent just walk around and ask people</td>
</tr>
<tr>
<td>it is one on one rather than sharing to the public</td>
</tr>
<tr>
<td>just to go and to talk to someone</td>
</tr>
<tr>
<td>ask it from a colleague</td>
</tr>
<tr>
<td>call them up or send them an email saying can we have a chat at X time</td>
</tr>
<tr>
<td>often would be just wandering in someone’s office</td>
</tr>
<tr>
<td>we do have weekly or fortnightly group meeting and share knowledge</td>
</tr>
<tr>
<td>sharing at directly as story telling about something worked on</td>
</tr>
<tr>
<td>the context which I would share high-value knowledge would be working together on a project for clients</td>
</tr>
<tr>
<td>usually through some sort of interpersonal means, face to face or over the telephone or by email by those kind of things</td>
</tr>
<tr>
<td>you might be more inclined to go down the corridor and ask someone</td>
</tr>
</tbody>
</table>
interaction they have with their superiors or colleagues

interacting with other people directly on a personal level, direct personal communication

get knowledge through face to face, sometimes over the phone

I will call up, I just pop up someone’s office and saying have you done this what do you know about this topic what do you know about this?

I think through starting conversation, through project meetings, through just normal interactions on a day to day basis

predominantly face-to-face during work hand over

What we can sum up from these ways of sharing is that they mostly share directly face-to-face by talking in their daily interactions at work, in meetings and in seminars with their peers. The role of seminars and meetings also are important to introduce colleagues to on another; in addition seminars themselves are the settings for high-value knowledge sharing. In Section 7.3.3 these channels or way of sharing are further described.

(2) Getting high-value knowledge (mainly directly from people)

To understand knowledge exchange flows, the previous section described the lawyers’ high-value knowledge sharing experiences, and preferences. Here some evidence is presented that indicates staff usually get or receive high-value knowledge directly from their colleagues and superiors as well. One KM lawyer (Local HI) said:

(As source of high-value knowledge) After their own experience ...I would say particularly the senior people, I would say from their trusted colleagues, what I mean is they will ask the partner down the corridor rather than look at an electronic database (More in Appendix F.4).

Having confirmed the above argument, however, in spite of the high-value knowledge sharing in which experts share mainly directly with people rather than KMSs, users are not solely reliant on the direct human sources such as their colleagues in getting high-value knowledge. They get some high-value knowledge also through the IT-based KMSs and tools. One lawyer said that KMSs also represent 30 to 40 percent of high-value knowledge for lawyers:

I think generally you find that lawyers get a lot of high-value knowledge from their direct colleagues and direct supervisors, you know, partner or senior lawyers [Researcher: mostly from people rather than IT-based KMS?] yes, absolutely, technology would be a part of that but I would think that would only represent 30 or 40 percent but most of that would come from the interaction they have with their superiors or colleagues. ... I think the primary source [of high-value knowledge] is your supervisors or your direct colleagues.
The reasons why users get high-value knowledge mostly from people are similar to the reasons they share high-value knowledge directly with people (mentioned above). These reasons are: it has context; it is able to get tacit knowledge; it is easy, reliable and so on. More explanations about them are beyond the scope of this study. One of the lawyers who reported that she got a great deal of high-value knowledge from her superiors and from colleagues claimed that it was because high-value knowledge is tacit knowledge and it not in KMSs:

... generally the know-how reside... the know-how is tacit knowledge and it is not explicit so it is a question of sitting down within and actually extracting that tacit knowledge and become one of a mentoring coaching role and that is both from legal perspective from the practice management perspective, business development perspectives it come as a whole bunch of areas it is not just a practice the legal practice.

7.3.2. Quantitative data supporting direct high-value knowledge flow

Introduction:

In this section, as a complement to qualitative data, the quantitative data derived from a brief survey of participants about the amount of high- and low-value knowledge that lawyers share or get from different sources are presented. But before presenting the finding, first the necessary information about the survey needs to be explained in this section. The data come from four tables (or four questions by a Likert scale) which were filled out during the interviews by participants (Appendix C).

The interview questions were designed in a such way as to measure the users’ self-rating of the approximate or average amount of high- and low-value knowledge that they get from different sources or share with different targets. They were asked to rate the amount of high-value knowledge that they got from the three main KMSs of the firm including Intranets, KDB and the Precedent Database, from “not at all” to “great deal”. Furthermore, they were asked to rate the amount of high-value knowledge that they get from their superiors (partners) and their colleagues. In addition, they were asked to rate the amount of high-value knowledge that they contribute to the three KMSs or share directly with their superiors or colleagues. The same questions were also asked about low-value knowledge. The result (average) of these scales is the source of the first type of charts that are presented in this chapter.

After rating each source or target regarding knowledge sharing and reuse, they were asked to explain why and how they get or share that much, and any communication channels, which provided a good source of qualitative data. Also at the end of each scale or rating table, another type of questions (listed below) was asked from participants. They were asked to choose one out of the list in the table or outside of
that as the source or target of the most high-value knowledge or low-value knowledge, which provides extra information and a source for the second type of the charts here.

- From where (which source) do you get the most high/low-value knowledge?
- With which target do you share the most of your high/low-value knowledge?

These data were collected in the second phase of data collection, so the number of participants was 15 (for some of the charts this was 14). As a key to understanding the charts, the questionnaire uses the Likert scale to rate the amount of knowledge that lawyers get or share. So it ranges as following: 0 = Not at all, 1 = Very little, 2 = Little, 3 = Somewhat, 4 = Much, 5 = Very much, and 6 = A great deal.

As explained in chapter three, the quantitative part of the study is not the main source of data; it uses simple descriptive statistics, but it serves some purpose: to provide a basis to prompt the interviewees to talk more about the relevant aspect of the research, to give the researcher an ability to quantify their ideas and present them visually, and it is used to confirm and complement the qualitative data as another method of data collection (triangulation).

The purpose of this part is to understand which intermediary (IT, Central HI, Local HI) intermediate or should intermediate high- and low-value knowledge flows. So we regard getting knowledge from the three databases or contributing to them as using the technology as an intermediary; in the charts this is labeled KMSs. Accordingly sharing knowledge with their colleagues or superiors or getting knowledge from them is considered as direct knowledge flow without facilitation by technology and possibly facilitation by human intermediaries; in the charts this is labeled people.

As described in chapter three, not all the interviewees were the users (lawyers); some of them were from the KM department. So they were asked to answer the questionnaire by disclosing how much they thought lawyers get from the sources or share with the targets different valued knowledge, based on their perception and experience. Although their rating was separately measured and reviewed, here we just present the whole interviewees’ idea, because there were no significant differences between the answers of the lawyers and the KM team people. Only the KM team valued the KMSs a little more than lawyers as source or target of high-value knowledge. Somehow this bias can be understood because if they underestimate the technologies, KMSs, it might mean that they are slightly underestimating their roles. It can be argued that another reason for this is they mostly see this technology-relevant aspect of knowledge sharing and reuse because they mainly deal with the IT of the firm.
High-value knowledge flow

Chart 7.1 shows that lawyers get (find or receive) almost ‘very much’ (4.8) high-value knowledge directly from their colleagues and superiors, while they get less than this amount (3.7) from the KMSs. As will be explained below, lawyers get high-value knowledge from technology as well, especially from the specialized databases such as LexisNexis (in Intranet) and the Precedent Database. But lawyers share most of their high-value knowledge directly with people in the firm, rather than contributing to KMSs. They contribute “little” or “somewhat” (2.5) high-value knowledge to KMSs (The lawyers’ survey, without including the KM team members, indicates that they even contribute less than this to KMSs [“very little", 2], see Appendix F.5).

![Chart 7.1. Comparison of high-value knowledge that knowledge workers get from or share with people and KMSs](image)

In this section we describe the participants’ answers to the end of the table’s questions (Second type question), which ask them to choose the source or target of the most high-and low-value knowledge for them. Chart 7.2 indicates that 60 percent of lawyers find and receive most high-value knowledge for their work from people, including their colleagues or partners. While 20 percent choose both KMSs and people for the most high-value knowledge that they get, only 20 percent get most of the high-value knowledge from KMSs.
Chart 7.2. Comparison of users' high-value knowledge sources

Chart 7.3 depicts that 80 percent of lawyers share or like to share most of their own high-value knowledge with people, including their colleagues or partners. While 7 percent choose both KMSs and people as the target of a great part of lawyers' high-value knowledge, only 13 percent contribute most of their high-value knowledge into KMSs.
Therefore, these charts indicate that technology is not the most important facilitator of high-value knowledge flow in the organization, because people get more high-value knowledge directly from their colleagues and superiors rather than through KMSs. This is significant in terms of sharing knowledge which is regarded as more important and high-value by itself. Knowledge holders share or intend to share more of their high-value knowledge directly with people rather than by contributing to the IT-based KMSs. Thus, this data show less intermediation of technology for high-value knowledge, but does not explicitly indicate HIs as an intermediary. But the qualitative data, which is explained in the following sections, indicates that people exchange more high-value knowledge directly through situations that the Local HI can provide and facilitate, such as meetings, seminars, and normal interaction in a prompted knowledge sharing and reuse environment and culture.

7.3.3. The methods (channels) of direct high-value knowledge flow

As we found so far, high-value knowledge is exchanged more directly with less intermediation or facilitation by technology. To understand the intermediary of high-value knowledge, we need to explore further how this exchange happens. In this
section some of the important settings for high-value knowledge sharing, including learning seminars, meetings and daily interaction, are discussed.

(1) Learning seminars or meetings

One of the critical ways in which high-value knowledge easily flows from knowledge holders to knowledge seekers is in learning seminars or meetings. These seminars are held in the firm in order to share valuable and important internal knowledge. In these seminars or meetings experts, experienced or senior staff, staff who have finished an important project, or a staff member who has done practical research on a matter, usually present their findings or lessons to other staff. According to the data, high-value knowledge is exchanged in these settings; actually the primary way of work-related sharing knowledge for lawyers is through regular meetings or seminars. These learning seminars are specialized and every practice group has its own seminar in which, in addition to valuable presentations, there is opportunity for interacting, exploring and learning through questions and discussion:

Our primary method of knowledge sharing in this group [through the] weekly or fortnightly meeting at which most of the presentations are done by people below partner level, but partners do frequently participate in the debate .... You know that is important, I mean they will have a sense of some decision having been handed down, for example, but they might ... miss some important aspect of it, so having somebody who spends the time to figure out what it might be important and explain to the rest of the group can be useful.

These seminars are regarded by most of the lawyers as the best way of sharing high-value knowledge, because of the characteristics or conditions in which people see each other, formally and informally learn from each others' experiences and expertise, exchange tacit and explicit knowledge, and develop networks for further knowledge exchange. Many interviewees stated that in these seminars, which are held usually weekly or fortnightly, very much or a great deal of high-value knowledge is shared:

My preference is [sharing directly] with people... so what we have in our ... group is we have what we call ... continued learning education seminars at least once a month usually two; and that will involve typically two ...[of] our lawyers within our group researching a topic putting on the database but actually presenting. We will go a meeting room and they will present the information that they have learned whether it will be about the specific file or a specific experience that they have had a research development in a particular area of law and they will present that information to us, and that forum give us the opportunity to meet face-to-face and then face-to-face share the information and also ask questions; and honestly I think that is perhaps the most effective way to sharing knowledge; because ... give like the divisional people the chance to the visual interaction. There will be also the opportunity to explore and ask questions
and discuss for interactive people and there also be handout which summarized the information.

Respondents regarded the seminars or discussion meetings as important initiatives or ways of sharing knowledge, at the same time they believed that they get the most high-value knowledge from their colleagues and superiors, so it is normal and reasonable to conclude that these meetings can be the best mediation for direct knowledge sharing. In addition to the attendance of their colleagues, their superiors and experienced staff also share their valid views there. Appendix F.6 provides more evidence from interviews supporting the fact that learning seminars and meetings are an appropriate way of sharing high-value knowledge.

Although most of the interviewees believed these seminars provided the best places for the exchange of high-value knowledge, and they could depend on the content and presentations and the experts’ tenure and expertise, not everybody always get or share high-value knowledge.

In addition to learning seminars, precedent drafting meetings in which the Local HI establishes a type of collaborative meeting of experts in a certain area on an ad hoc basis to draft a precedent, is regarded as a setting for high-value knowledge sharing and reuse:

They share [high-value knowledge] by sitting in precedent drafting group there is a lot of sharing goes on there because all give their experiences and discuss who we should amend the clause because you know this one happen those end and that happen to the other person.

(2) Group meeting for both high- and low-value knowledge

According to the data, another way in which people share or get direct high-value knowledge is through regular group or team meetings, although the exchange of high-value knowledge in these meetings is less than in learning seminars and precedent drafting meetings. In spite of the seminars, these meetings’ primary purpose is not knowledge sharing or learning, but during the meeting the group members usually share and/or exchange both high- and low-value knowledge. Usually in these meetings group affairs such as new projects, reports, and administrative issues are discussed. Along with them, experts formally or informally discuss relevant issues and get knowledge. For example, they may find who is working in which area and then they may contact them for further information:

[we share very much of our high-value knowledge directly with our colleagues], through talking to them, ...often would be just wandering in someone’s office but also we do have weekly or fortnightly group meeting and we often have discussion about specific issues that we encountered during the week or specific work that we are working on and I guess we share that way. ...(purpose of these
meeting) is both, it is knowledge sharing, as a business meeting and looking out the business aspects of works; also there is defiantly knowledge sharing components and the half of the meeting devoted to that. . . ., half that meeting to talk about what particular people working on and what issues that come up has been relevant and how dealt with; it is very informal but also very effective because it is very informal (More in Appendix F.7).

(3) Day-to-day interaction

In addition to learning seminars and group meetings, which are somehow formally established for exchanging knowledge, normal and daily interaction with experts is another very important way of sharing and getting high-value knowledge. This direct, verbal, and face-to-face communication happens especially for those colleagues who are physically in the same workplace, because there are more frequent opportunities to socialize and meet each other during coffee breaks, at lunch and in offices corridors. People are more willing to share high-value knowledge with close colleagues who they know and trust and develop networks and relationships. These interactions lead to the creation of networks and trust. Even interviewees from KM department believed that the knowledge that is exchanged through direct interaction with people is more valuable than that from KMSs.

[They get high-value knowledge from their colleagues and superiors through] conversation; I think through starting conversations, through project meetings, through just normal interactions on a day to day basis. . . . I think the knowledge that comes from dealing directly with people is far more valuable than reading something on the Intranet.

Another instance where high-value knowledge is exchanged among the experts is in a team working on the same project or transaction. In such situations, the opportunity for interacting, coaching, mentoring, and sharing and reusing high-value and tacit knowledge is present: “[lawyers get high-value knowledge from superiors] in most cases generally while you are working on a transaction” (More examples in Appendix F.4 and F.6). The next section explains the relevant intermediaries of the high-value knowledge flow.

7.4. Intermediaries of High-value Knowledge Sharing and Reuse

Up to this point, we have seen that high-value knowledge mostly flows in direct contact between people in the organization rather than through technology, but it is necessary to know who or what facilitates this knowledge flow. This section tries to find the appropriate intermediary; however we cannot give a straightforward and absolute response; but with the help of the data we can indicate which intermediaries are more effective. According to the case study data, high-value knowledge reuse and
sharing is more intermediated or can be more intermediated by Local HIs and less intermediated or can be intermediated by IT and consequently by Central HI. In the following sub-sections the case study evidence for this finding is presented.

7.4.1. More intermediation by Local HI

As explained, people mostly tend to share their high-value knowledge directly with each other, especially with their colleagues in their practice groups through seminars and meetings. Due to their characteristics and situation in the groups, Local HIs are the best and most appropriate intermediary to facilitate direct knowledge sharing. Generally they are effective intermediaries in establishing and facilitating three channels of high-value knowledge flow mentioned above. Local HIs can initiate, facilitate or run the seminars and meetings, and improve and promote the environment and culture of the group for more and better exchanges of knowledge in daily interaction as they do in the those practice groups which have dedicated Local HIs in the firm.

As argued in chapter six, most of the knowledge-oriented functions can be better performed by the Local HI, ranging from encouraging experts to share to setting on appropriate working environment. By these functions Local HIs facilitate mostly direct, tacit, and high-value knowledge sharing. For example, they have important roles in encouraging, prompting, and assisting staff in knowledge sharing and contributing to KMSs (as discussed earlier most of the sharing or contribution relate to high-value knowledge). For instance, a KM lawyer believed that lawyers share little high-value knowledge through the KM team but in most cases share much through the Local HI: “[all the knowledge that goes to that KMSs, goes through me] except that Precedent Database goes to [the] partner, that [is] managed by the partner I certainly facilitate that as well.”

Notably initiating, planning, organizing, and running learning seminars and different meetings such as precedent drafting meetings which provide the opportunity to exchange high-value knowledge are highly important roles of the Local HI in this respect (as described in chapter six). Local HIs are designated to facilitate and organize such learning seminars, process improvement meetings, and special group meetings, which were found to be a setting for high-value knowledge exchange. Even due to their attendance in all gatherings and meeting in the group, they promote knowledge sharing. A KM lawyer (Local HI) who initiates and runs these meetings, explained her idea about the way lawyers could share their high-value knowledge and the communication channels in their group:

...either informally by discussions and by providing examples of documents, to share a bit by having fortnightly education meetings where they sit around and talk about what people are doing or maybe they get someone to give a little talk about something that was worked on, that is more formal. They share by sitting
in [a] precedent drafting group; there is a lot of sharing goes on there because all
give their experiences and discuss who we should amend the clause because, you
know, this one happened, those end, and that happen to the other person.
[Researcher: Who initiates and facilitate these meetings?] ...I sit at every
meeting (More in Appendix F.8.).

Moreover, Local HIs have an inevitable impact on and a role in increasing the value
of knowledge in KMSs. Their KMSs-relevant roles such quality control, adding
meta-data, updating, working on the content of KMSs like summarizing, indexing,
categorizing and so on, increase the value of knowledge in KMSs. As one of the
interviewees said, the Local HI can facilitate turning the low-value knowledge to
high-value knowledge. For example, in terms of adding meta-data, they are involved
in providing attachments to documents and implementing policies in this regard:

[We get very much high-value knowledge from the Precedent Database.] ... it is
generally because our transaction practice is document-based and so we would
need to spend a lot of time preparing documentation; we have adopted a policy
that we also include some know-how within the precedent so it is not just a
precedent but it’s some sort of explanation about the law around using it and
various options about using it, that is just very useful.

In addition, they can facilitate finding and receiving high-value knowledge by
introducing the knowledge sources or “who knows what” to their group members
(which is regarded by many as high-value knowledge) and also sometimes they can
themselves be the source of high-value knowledge.

To sum up, due to Local HIs’ roles and position, they are the suitable intermediary
for high-value knowledge sharing and reuse.

7.4.2. Less intermediation by technology

Generally, after the finding discussed in the previous section that more high-value
knowledge flows directly between people, IT as intermediary is proven to have less
of an intermediation role in high-value knowledge. In this section more evidence is
presented regarding the lesser role of IT-based KMSs and tools in high-value
knowledge. However, as argued before, to some extent IT facilitates high-value
knowledge as well. Due to different aspects of IT in high-value knowledge, and the
difficulty of understanding the IT role and impact in high-value knowledge, and a
little controversy in some of the evidence, in this section, roles of IT in high-value
knowledge sharing and reuse and different issues about data are explained from
different aspects.
Little intermediation of IT in high-value knowledge flow

Our data show that lawyers contribute very little if any high-value knowledge to IT-based KMSs. As argued above, lawyers mostly prefer to share their high-value knowledge directly with their colleagues or supervisors or subordinates (see Appendix F.9). For example, a lawyer stated: "[I contribute ‘very little’ of my own high-value knowledge to divisional Intranet], I post stuff to the divisional Intranet, but I am not sure they are high-value knowledge".

As noted above, there are many reasons why people do not share through IT, for example, it is difficult for them to contribute through KMSs. Interviewees argued that sharing knowledge directly with people was more a natural and human sort of sharing knowledge than contributing to KMSs. On the other hand, to a greater extent, if people share they share mostly high-value knowledge, while they do not share through KMSs usually any: "Yes, we encourage them to contribute [to KMSs], but it is quite difficult to get them to do so".

Moreover, according to the data, many users find or receive little or very little high-value knowledge from KMSs; although some of them mentioned that they get some high-value knowledge. Two participants said:

I think things like the KDB is of low value to me; that is not to say knowledge on it is low-value but as an information management tool I get no value out of it all.

I think the knowledge that comes from dealing directly with people is far more valuable than reading something on the Intranet.

Or even if there is high-value knowledge in the KMSs, users do not use them. One interviewee said that KMSs are the least source of high-value knowledge “not because they don’t offer the high-value knowledge, it is because people tend to not look at them as much, although the database is there but they don’t look at it”. However, IT also intermediates some high-value knowledge which is discussed in section 7.4.2 (3).

Lack of capability or suitability of IT for high-value knowledge or tacit knowledge

This section explains three more reasons why IT is not capable or suitable for high-value knowledge. First, tacit knowledge, which is regarded as mostly high-value knowledge, cannot be intermediated through IT; second, there are difficulties and issues around using IT for sharing knowledge; and third, the people prefer to share high-value knowledge directly and not through KMSs.

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**Tacit dimension.** In some previous studies, and in the initial research framework of this study discussed in chapter two, participants' description of and discussion about high-value knowledge indicate that tacitness (or the tacit dimension) is one main component (or form) of high-value knowledge. This was sometimes mentioned explicitly: "generally the know-how resides [in people head], the know-how is tacit knowledge and it is not explicit".

But mainly the relationship between tacit knowledge and high-value knowledge can be realized implicitly in the data. For example, data show that employees share their high-value knowledge directly with each other or get it directly; one factor that makes the difference between exchanging knowledge directly and indirectly through IT is tacit knowledge or the tacit dimension of knowledge. In direct exchanges of knowledge, tacit knowledge can be exchanged while it is hard, even impossible, to articulate, externalize and exchange tacit knowledge through IT. As discussed in the literature review, a piece of knowledge can have two dimensions – explicit and tacit; probably the factor that makes direct exchange of knowledge, high-value knowledge exchange, is the existence of the tacit dimension of knowledge with its explicit dimension together.

As discussed above, experts share or reuse high-value knowledge through seminars, meetings, and direct interactions, while on the other hand, these channels or settings for knowledge exchange are a place for socialization and the exchange of tacit knowledge as well. So it can be argued that participants in these situations or settings are able to exchange tacit knowledge or the tacit dimension of knowledge as well and regard it as high-value knowledge. Therefore, one of the main reasons that IT is not an appropriate intermediary for high-value knowledge is its inability to intermediate tacit knowledge.

Even if experts articulate and document his/her tacit knowledge and put it into a KMS, its value may be reduced because it may not be possible to articulate all dimensions of knowledge. So, some believe that it turns from knowledge of high value to information of low value, as was discussed in the literature review. One lawyer stated that the knowledge in KMSs is perceived as of low value because it is reduced in content to be in KMSs, while direct knowledge sharing is like story telling that is of higher value. In direct sharing of knowledge, all meta-data, including the contexts and interpretation further expands the knowledge, is available, and the channel flow is, therefore, rich; this is lacking in KMSs.

*I mean reducing knowledge down [to] something to put in databases is actually quite time-intense, and also as perceived as being low value; whereas a few sharing directly as story telling about something worked on or as an input into a product that was selling to our clients ... that is perceived as much more valuable.*
Difficulty of Contribution to KMSs. Another reason that technology is not an appropriate or preferred intermediary for high-value knowledge and even for any kind of contribution is that generally the technological applications are sometimes difficult to manage and are associated with some issues (which were discussed in chapter six). For example, for contributing knowledge through KMSs, people need to prepare it for other users, fill out forms, follow procedures about keywords and so on, and upload it or get help from another person, while in directly sharing, they just contact as normal with people and get the benefits of a personal relationship or network, such as reciprocity. That is why some interviewees believed sharing directly is a more natural way of sharing. One of the KM team members said that difficulties such as getting help from someone else to contribute to KMSs hinder knowledge contribution. They also believe that the technology in this respect is a “real put-off”.

There are some other reasons which prevent generally contribution to public KMSs such as fear of criticism, and lack of trust and reciprocity which affect staff’s decision to not share any knowledge, especially high-value knowledge, through KMSs.

Preference of people. Almost all interviewees stated that lawyers prefer to share their knowledge, especially high-value knowledge, directly with people rather than contributing to KMSs. The ideas of some interviewees were revealed in answers to one of the interview questions as presented in Table 7.2.

Table 7.2. Preference of people to share directly, not through IT

<table>
<thead>
<tr>
<th>The interview question: Do you (lawyers) prefer to contribute your (their) own high-value knowledge to IT-based systems such as the KDB or share directly with people? Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>With people definitely, because it is less effort; for lawyers are trained to present and to be able to communicate the information in a certain way and I think that a lot of the time it is just [being] scared of technology and also the technology can be quite cumbersome.</td>
</tr>
<tr>
<td>I think they [lawyers] prefer to share directly with people, because it is being shared with less people. I think it is seen as currency, knowledge is power, so it helps to build a relationship that sort of things.</td>
</tr>
<tr>
<td>Directly with people, because it is easier I think.</td>
</tr>
<tr>
<td>My preference is with people.</td>
</tr>
<tr>
<td>My feeling is that they prefer to share directly with people, [because] just simply from the time [perspective].</td>
</tr>
<tr>
<td>With people, yes, … I think possibly also the best knowledge is shared through person to person contact and you can trace it, it is not lots.</td>
</tr>
</tbody>
</table>
(3) IT intermediary for some high-value knowledge flow and reasons

Nevertheless, IT intermediates some high-value knowledge as well. Through IT (KMSs and tools) some high-value knowledge is shared and reused, but this flow compared with the flow of high-value knowledge outside of IT is little. Some of the participants stated that IT facilitates both high- and low-value knowledge. Although this study confirms that some high-value knowledge flows through IT, there are some other reasons why IT is rated as a high-value knowledge intermediary by some participants which are discussed in this section.

According to the data, people find and receive some high-value knowledge from KMSs but do not contribute high-value knowledge to them. It is mostly the external knowledge in KMSs that are regarded as of high value.

KMSs as source of some high-value knowledge. Generally some interviewees mentioned that they receive both high- and low-value knowledge through IT such as in email that they get, news alerts and subscription to certain online information. As one of the lawyers says, after directly getting knowledge from people, the next source is her desktop computer which is a gateway to receiving all knowledge:

[The role of IT in getting and finding high-value knowledge] ...really depends, in terms of media, I mean the tools that I use to probably get my information, other than people walking into the office and telling me something, is my desktop. Let us say, I receive a lot of stuff by email, the email can either be generated by colleagues who sort of compile information for us, for example, news alerts, but I also subscribe to a number of services which deliver a various information, for example, there is a blog which deals with trade issues that I subscribe to which is fed each time things [are] posted that is tremendously useful. I get Google alerts on few sorts of words .... So that kind of staff from media I get high-value knowledge. Now that knowledge is sometimes directly useful for clients because it is on an issue that I am working on, ... equality can just be more of medium-value knowledge stuff that keep me across what a client asks, then I can say I am aware of that.

Employees find some high-value knowledge through IT, but in most cases they do not look to IT as the first priority in finding high-value knowledge. IT facilitates some percentage of high-value knowledge flow, as a lawyer said: “Technology would be a part of that but I would think that would only represent 30 or 40 percent”.

As the quantitative data show, some people find high-value knowledge from KMSs (will discussed in the paragraphs below). Appendix F.10 indicates those people’s explanations about the high-value knowledge that they get from KMSs (DIs, and KDB) and from the public Internet.
Furthermore, while some interviewees considered Intranet as a source of high-value knowledge, they mostly meant the external subscribed databases for the law firm; for example, LexisNexis which is linked to the Intranet. This database provides many legal solutions and tools for lawyers. Also, links to external news or law and clients’ relevant websites are considered by some lawyers as high-value knowledge: “I find more high-value knowledge in DI by probably accessing the external databases like LexisNexis”.

Moreover, some interviewees stated that one can get high-value knowledge, for example, from the KDB sometimes but it depended on whether the knowledge one is seeking is actually there or not. According to our data the knowledge in the KMSs usually are not of high quality, comprehensive or current (Appendix F.11).

Some reasons why IT is considered to be an intermediary for high-value knowledge

As mentioned IT intermediates some high-value knowledge, however, there are some other reasons that participants rated IT for high-value knowledge in this study, which are presented below.

Indirect or secondary role of IT-based KM tools in high-value knowledge flow: sometimes, IT-based KMSs or tools are not stand-alone intermediaries for high-value knowledge, but facilitators of direct knowledge exchange. Three types of technologies which are regarded by some as high-value knowledge intermediaries include social networking technologies, KMSs, and “yellow page” directories.

Social networking technologies. Sometimes technological communication or networking tools play more roles in high-value knowledge flow than KMSs, but it seems that its intermediation is secondary, indirect and depends on other previous setting or networks. For example, knowledge workers may use email, video-conferencing, wiki, discussion boards, or telephone (if we regard it as a IT tool) for sharing high-value knowledge but it comes back to their previous relationship, which is different from a situation in which people use KMSs for contributing and getting high-value knowledge. It appears that those technologies which facilitate people to directly interact with colleagues are perceived as intermediaries for high-value knowledge. One lawyer said:

[The role of IT, KMSs as a medium in sharing high-value knowledge with others] … really [is] just sort of telecommunication infrastructure, ability to talk with your colleague in X [other country] on the telephone or video conference; we need to exchange that sort of stuff…. [I share high-value knowledge] usually through some sort of interpersonal means, face-to-face or over the telephone or by email (More in Appendix F.12).
People find initial knowledge from KMSs and then exchange directly high-value knowledge: Knowledge users may find a piece of knowledge in a KMSs but to get more high-value knowledge, they contact the producer of the knowledge for more detail, a tacit, or more contextual knowledge. One lawyer who rated getting high-value knowledge from some KMSs very highly said:

I think the reality is that most people find information and know-how not by going to databases but by finding out the initial information sources from a database and going to speak to the person that either contributed or know something about a particular issue.

KMSs as skills directory. Another instance in which IT, such as “yellow pages”, indirectly intermediate the high-value knowledge is when IT is used to find people and their expertise to contact them and get high-value knowledge directly. Finding “who knows what” as a source of high-value knowledge is regarded as valuable:

I think there is a certain part of the internet which is very valuable, for instance on the internet we have a profile of the partners, if someone internal was looking on the public internet, I think that they would possibly find a lot of high-value knowledge in terms of looking for expertise and looking for current news ....

KMSs as a source of high-value knowledge due to the Local HI roles. In the case study, among the three main KMSs, the Precedent Database was rated as a source of high-value knowledge more than other databases, although it still rated less than direct personal contact. The Precedent Database for some groups was a source of high-value knowledge because of the nature of their business, which required the application of many precedents. In some groups they use too much precedent because they have to, and some hesitated to consider it high-value knowledge. Some even questioned whether precedents should be regarded as know-how or knowledge. But anyway most of the interviewees considered it as an important piece of knowledge (see Appendix F.13.).

Generally the two reasons participants gave that credited the Precedent Database as a source of high-value knowledge were: (a) requirement of them to use in their work frequently, and (b) association of meta-data with precedents in the system. As we discussed elsewhere in this thesis, Local HIs have an inevitable role in precedent development and adding meta-data to make it of high value.

Different meanings of high-value knowledge in KMSs (heavy dependence on IT). One difficulty in assessing the value of KMSs is the absence of a clear cut definition of high- and low-value knowledge among different people, because value judgment tends to be subjective. Some considered KMSs as a source of high-value knowledge, but on further explanation, actually placed more emphasis on their heavy dependence on KMSs in their daily activities, such as in administrative tasks. Thus they regarded IT as valuable as systems and tools rather than as a source of high-value knowledge.
Some of them, especially the younger staff, revealed that without computers they could not work: "[I get any knowledge or information] through the computer as the primary way, and the second through face-to-face, some times over the phone."

Another example is that while some rated knowledge gathered from the Intranet of low value, one lawyer rated the amount of high-value knowledge that she got from Intranet "very much" to a "great deal", but explained that was because it was convenient and most of the things she needed was there, such as administration works or putting requests for annual leave. She was not actually using the system for high-value knowledge (Appendix F.14).

KM team rated IT as intermediary of high-value knowledge more than lawyers. Our data show that people from the KM team rated and regarded KMSs higher as intermediaries for high-value knowledge than the lawyers. For example, one KM team member believed that lawyers share much high-value knowledge through KMSs more than by direct personal exchange.

[I think lawyers get very much high-value knowledge from DIs] and the reason for very much [is] because it is very rich in content; there is a lot of different kinds of contents and you can see the different topics and different events within the particular division, cross referenced against each other and you get many many more contributors to the Intranet as well (More in Appendix E.10).

Generally it is important for the KM team who implement and run KM-relevant IT infrastructure, systems and tools, to see the success of IT in knowledge sharing and reuse especially high-value knowledge, as one of the interviewees explained and said that good people should share high-value knowledge both directly with people and contribute to KMSs.

Potential capability of IT to turn low-value knowledge to high-value

In some conditions technology may play a role in high-value knowledge flow as well such as turning low-value knowledge or information into high-value knowledge by its unique and powerful capacity. But, it is not always easily attainable or possible and it is a challenge for technology and demanding for users. One lawyer, also a Local HI, argued that technology may deliver high-value knowledge but in ineffective ways. However, she said that sophisticated technologies such as Business Intelligent, by integrating all knowledge or information systems, can deliver high-value knowledge, but it was not used in the firm for this purpose at the time (of the interview).

However, the simple application of technology, for example, a sophisticated search engine, is somehow effective. A search engine which is able to search across all the repositories in some cases can potentially deliver knowledge in context or knowledge in relation to other knowledge; it can put together pieces of low-value knowledge or
information in a contextual way. Moreover, even having updated and high-quality KMSs with the effective knowledge-oriented and technology-oriented roles of HIIs, IT can be an intermediary for high-value knowledge: “It (KDB) got significant potential to do that [provide good and high-value knowledge] if kept up to date and if what is in there is accurate and people put stuff in there”.

In conclusion, at the time of our research, IT in the firm of study could not be regarded as a suitable or common intermediary for high-value knowledge; however, there was potential to apply KMSs and IT tools through effective HIIs, especially Local HIIs to facilitate some high-value knowledge. But generally, for tacit and high-value knowledge, IT was not an appropriate intermediary.

7.4.3. Less intermediation by the Central HI

As discussed in previous chapters, the Central HIIs have the responsibility for technology in the firm, in their performance of technology-oriented HI roles. Their intermediation in high-value knowledge, to a great extent, depends on the role of KMSs and IT-tools in high-value knowledge. As we argued above, technology has not much role in high-value knowledge sharing and reuse; consequently the Central HIIs have a lesser role in this respect as well.

But the Central HI, except for IT-relevant roles, does have some other roles, such as providing library services, providing and sending email alerts, and facilitating subscriptions to external knowledge sources that are both high- and low-value knowledge.

Another service of Central HIIs is in the research assistance and material that librarians provide for users. Some participants regarded these as of low value, and others as high-value knowledge. One lawyer said that the knowledge that librarians provide is low-value knowledge because the knowledge is not provided by a legal expert; it is provided by a librarian who, for instance, looks up a case for them and maybe does a case summary, and consequently the result of this research includes no context around the problem. One KM team member stated that lawyers get “somewhat” high-value knowledge through the KM team and explained:

I know that there [are] some who consider that they get great value and others don’t, so probably overall I rated about “somewhat”. (how) we have as either they requested or we do have a series of bulletins once a week on different topics that alert people to the various key topics that they can subscribe to.

One role of the Central HIIs which is sometimes regarded as facilitating high-value knowledge exchange is being a source of “who knows what” and providing valuable meta-knowledge to people, such as a contextual or value-added guide to the KMSs. But these services of the Central HIIs are not very common and are limited to the librarians; Local HIIs usually do these better.
Moreover, some lawyers regard the Central HIs as intermediaries for high-value knowledge because they are usually from groups that do not have a dedicated Local HI. In this case, usually staff from the KM team facilitate knowledge sharing and reuse for those groups by helping them in contribution to KMSs and so on. More examples that indicate the Central HI role in high-value knowledge are presented in Appendix F.15 which indicate that some participants believe the Central HI’s role in high-value knowledge is “somewhat” or “less”, or they talked generally about the Central HI’s role but not specifically with regard to high-value knowledge.

7.5. Low-value Knowledge Sharing and Reuse Flow

People get low-value knowledge or information from many sources almost everywhere in this high-tech age. So we do not particularly explain this like high-value knowledge. Our data show that lawyers get low-value knowledge both through IT-based KMSs and directly from people. In comparison with the people (colleagues) as a source of knowledge, KMSs are somehow passive and static, not a dynamic source; they are more at risk of being a source and intermediary of low-value knowledge due for the likelihood of accumulating out of date, overloaded, and non-relevant knowledge. Lawyers get more low-value knowledge from KMSs and IT tools such as distributed emails:

If you ask me where did I get most of my high-value knowledge I would say from my colleagues and superiors, and where did I get most of my low-value knowledge I probably get from databases but I would also get a reasonable low-value knowledge from my colleagues as well.

In addition to the KMSs, it is interesting that colleagues can be the source of low-value knowledge as well as high-value knowledge, because people tend to talk about everything. Actually, by exchanging more low-value knowledge or information, they can develop rapport and trust and thus reach the point of sharing high-value knowledge. One lawyer who got a great deal of both high- and low-value knowledge from her colleagues said: “All the information [high- and low-value knowledge] is coming from them”.

While staff get both high- and low-value knowledge from their colleagues, usually they get just high-value knowledge from their superiors, because of the latter’s time shortage and the power relationship, as one of the lawyers said:

I think because[of] the power relationship between you and your superiors you [probably] are going to get more high-value knowledge because it is directly related to what you are doing rather than low-value knowledge; whereas with your colleagues. the power relationship is much [more] equal and so you [are prepared to ask some of the silly questions.
Interviewees reported that in addition to KMSs, emails, or in direct exchange with their colleagues, they get much low-value knowledge and non-relevant information from secretaries, other departments of the firm such as marketing or business development managers, newspapers and so on. According to the data, unlike the learning seminars and special knowledge sharing meetings, regular and usually weekly group meetings are also a source of some low-value knowledge because they talk usually deal with administrative and general issues.

On low-value knowledge sharing, two types of view emerged among the interviewees. Some said that they did not contribute any low-value knowledge to KMSs because it was not worth sharing. These respondents believed that contributed knowledge was high-value knowledge, but some said also that they contributed low-value knowledge to KMSs. Generally, however, they believed that they shared less low-value knowledge. It should be borne in mind that they themselves judged their knowledge sharing, so they would not have liked to admit they shared very much or even any low-value knowledge to the KMSs (although it depends on how they perceive and define low-value knowledge).

7.5.1. Quantitative data about low-value knowledge flow

Chart 7.4 shows that interviewees rated the KMSs as a source of low-value knowledge slightly more than other people. So lawyers get low-value knowledge directly from their colleagues as well as through KMSs. As was explained in the section on qualitative data, people, especially colleagues, are sources of both high- and low-value knowledge.

Regarding sharing low-value knowledge, participants reported that they share less low-value knowledge overall; as the chart shows, they share less than "somewhat". There are some reasons for this: some of them said that if they want to share, they share high-value knowledge, not low-value knowledge. But at the same time, many of them admitted to sharing low-value knowledge. They indicated that they shared low-value knowledge more (2.6) with people rather than contributing to KMSs (1.5). Another reason might be the difficulty of rating their own knowledge sharing as low-value knowledge.
Moreover, the participants' answers at the end of the Table of questions, Type 2 questions, about the low-value knowledge, strongly confirm KMSs as a source of low-value knowledge. In these questions, they chose one of the sources or targets that they get or share most low-value knowledge. Chart 7.5 indicates that 72 percent of the participants believe that lawyers find or receive most low-value knowledge for KMSs. While 14 percent chose both KMSs and people together for the most source of low-value knowledge that they get, the same percentage of participants said that the source of the most low-value knowledge that they get is just people. Therefore, this shows that KMS technology is the facilitator or intermediary of the low-value knowledge.

Chart 7.4. Comparison of low-value knowledge that users get from or share with people and KMSs
Chart 7.5. Sources in which users get most low-value knowledge

Chart 7.6 illustrates that 58 percent of participants believed that lawyers share low-value knowledge with their colleagues the most. Twenty-one percent chose KMSs as the target of lawyers' most low-value knowledge contributions. About 14 percent of them said that they did not share any low-value knowledge, but the 7 percent said that they share both with people and through KMSs.
To sum up, KMSs are more the source and intermediary of low-value knowledge for lawyers. Users find and receive more low-value knowledge from KMSs. However, according to the data, we cannot argue that technology is a facilitator or intermediary of low-value knowledge sharing, because the data show that people tend to share even low-value knowledge directly with people more than by contributing to KMSs.

Limitations: Generally low-value knowledge flow is considered less important by interviewees. There are some issues about this part of the survey because participants did not rate much the getting and contributing of low-value knowledge due to the lesser importance give to low-value knowledge, and some had problems in determining what low-value knowledge is. Some interviewees said that they did not share any low-value knowledge and consequently did not answer some questions. Although the result of this section is not showing any significant difference in terms of intermediaries, it nevertheless indicates and supports the qualitative data.

7.6. Intermediaries of Low-value Knowledge Flow

The previous sections explained that IT, particularly through KMSs, plays an important role in low-value knowledge or information flow in the organization. According to the findings of the research in chapters five and six, the Central HI is a
type of HI who is responsible for IT. So, two intermediaries of low-value knowledge, namely IT and Central HI, are briefly described in this section.

**7.6.1. Intermediation of low-value knowledge by IT**

The data show that people get more high-value knowledge directly from people and get more low-value knowledge from KMSs. The evidence from the interviews has been given above.

A knowledge database that is designed for contributing knowledge is not appreciated by lawyers. They believe that most of its knowledge is of low value, low quality, not current, and less reliable; consequently they do not regard it as an appropriate place for sharing and they do not tend to share high-value knowledge, but maybe low-value knowledge. One lawyer said:

I see that [knowledge on KDB] as low value, lower value, because the material [that] goes on there has ... there is a problem really with it in that ...there is certain lack of quality control, ... I don’t think that they [lawyers] get use, the KDB is low-value knowledge for me and I don’t think it gets used very often. (More in Appendix F.16).

Moreover, most of the interviewees believed that mostly knowledge that is shared with other people through KMSs has less value than the knowledge that is shared directly without KMSs. On the other hand, as mentioned before, when knowledge becomes explicit and articulated and goes to KMSs, it somehow loses some of its value; in other words, knowledge becomes mere information: “...I mean reducing knowledge down to something to [be] put in databases ..., and also perceived as being low”.

Furthermore, some interviewees said that because the knowledge is low-value knowledge, people quickly and very easily contribute it to KMSs. There can be some reason, such as people feeling less like losing competitive power if they share low-value knowledge; they may even think that they can advertise themselves as well.

One reason that people tended to contribute more knowledge (but mostly low-value) is the incentives for more contributions to KMSs. Sometimes, if there are requirements or policies imposed on people to contribute a certain number of posts to KMSs in a period of time, without a firm quality control, much low-value knowledge might go to the systems, and the KMSs thus becomes more of a source of low-value knowledge:

...keep performance indicators around the number of contributions to the database, which is fine except that people then focus on the number of contributions rather than the quality of contributions so you have a lot of rubbish in the database.
Besides, contributing high-value knowledge or high-value documents to KMSs usually requires spending more time. For example, it requires adding meta-data to make it more valuable, while the lawyers who are more knowledgeable do not have time or motivation to do so. Therefore, they prefer to share directly, easily, and briefly with selected colleagues.

IT is a suitable and necessary intermediary for low-value knowledge or information as one of the interviewees said, because there is much low-value knowledge or information which would be very difficult or impossible without technological management of them such as in capturing, storing, and retrieving. Some lawyers argued that the common communication channel of low-value knowledge is technology; because technology can serve as a useful way of storing all types of information and then provide facility for searching and retrieving.

Therefore, technology is the main source or medium that plays a role in finding and getting low-value knowledge or information. Besides, as the data indicate, a few people get some high-value knowledge as well as low-value knowledge through IT, so KMSs and technologies become the intermediaries for both types; although as an interviewee said, they are a more ineffective intermediary for high-value knowledge.

7.6.2. Intermediation of low-value knowledge by Central HI

Because technology, including KMSs and KM tools, is the most common and appropriate intermediary for knowledge of lesser value or information, the role of the Central HI is consequently vital as a provider and facilitator of technology for KM purposes. Chapter five explained the technology-oriented HI roles which are necessary to have the KMSs and KM tools up and running and which are performed mostly by Central HI.

The process of contributing and getting low-value knowledge or information could be made easier by improving the systems and search facilities. The Central HI facilitates knowledge sharing by assisting in contributors in the preparation and uploading of knowledge, especially those groups that do not have Local HIs. The Central HI facilitates low-value knowledge flow by collecting, storing and presenting them in an appropriate way in KMSs or distributing them for reuse. In this section, those roles that have been explained elsewhere will not be repeated.

Moreover, the KM team performs some roles in facilitating knowledge sharing and reuse which are necessary but not for high-value knowledge, for example, library services, individual research for users, doing case summaries, emailing news alerts, and facilitating knowledge contributions which are mostly low-value knowledge. Two interviewees from the Central HI said:
[Lawyers get much low-value knowledge from KM team] ...often we get questions that is very process-driven as well, so people turned to us for a lots of different things and all of the time they might ask very obvious questions that may not even relate to what we do but still we like to facilitate as being information through the firm, ...looking for a particular research tool, so not the actual research but looking for tools.

[lawyers share somewhat low-value knowledge through us - Know-How people] because sometime they [lawyers]) have to give us low-value knowledge to pass on; it is essential that is not high-value.

7.7. Comparison of High- and Low- value Knowledge by Quantitative Data

Illustrating the high- and low-value knowledge flow that interviewees reported in a single chart can give some extra insight. This section compares the same quantitative data about high- and low-value knowledge which are described above in the same charts. First, the sources of high- and low-value knowledge are compared and then the targets of sharing are evaluated.

From the data we can assume that people get both high- and low-value knowledge from all sources but differing in amounts. Before illustrating the quantitative data, researcher perceptions regarding the qualitative and quantitative data about the approximate amount of high- and low-value knowledge that lawyers get (find or receive) from different sources are shown in Figure 7.1. (This is not based on measurable quantitative data – the estimated size of boxes and their locations, whether in the high value knowledge area (top part of the Figure) or low value knowledge area (bottom part of the Figure), indicates the approximate proportion of high- and low-value knowledge that different sources provide for users). This indicates some sources, such as colleagues, seminars and superiors, who are mostly providers of high-value knowledge and are located mostly in high-value knowledge areas (top green). Colleagues are both providers of high- and low-value knowledge, which in the Figure is located in both areas. KMSs in general are located mostly in the area below; it means they are mostly sources of low-value knowledge. But they are not all the same; some may provide more high-value knowledge than others. However, any KMS can be different for different people in terms of their usefulness as high- and low-value knowledge (this is not easily judged without looking at it from individual situations).
Figure 7.1: Approximate high- and low-value knowledge that different sources provide for users

Chart 7.7 compares the amount of high- and low-value knowledge that lawyers find and receive from KMSs and people. It shows that lawyers find and receive more high-value knowledge directly from people rather than from KMSs. They get more low-value knowledge from KMSs than people, although the difference is not significant, because as explained in previous sections, people, especially colleagues, are the source of low-value knowledge as well.
Similarly, people share both their high- and low-value knowledge to all available targets but with different amounts. Chart 7.8 illustrates the sharing behavior of the lawyers. A significant finding of the study was that knowledge holders tend to share more high-value knowledge with people around them, including their colleagues and their superiors, rather than contribute to KMSs. Although experts share little or somewhat (2.5) of their high-value knowledge through IT or KMSs, for high-value knowledge sharing, the technology is not a determinant or significant intermediary. Instead, based on the discussion in chapters five and six, the Local HI plays more of a role in facilitating this direct high-value knowledge sharing.

Chart 7.8 indicates that generally the amount of high-value knowledge that people share or contribute is more than low-value knowledge, so it shows the importance of high-value knowledge flows. The comparison of the low-value knowledge directly shared with people or contributed through KMSs reveals that lawyers even share more low-value knowledge directly with each other rather than putting into the KMSs; maybe because spending time and the burden of using IT for sharing low-value knowledge is not worthwhile, so they prefer to easily chat with their colleagues. A chart in the Appendix F.17 illustrates the comparison of both high- and
low-value knowledge in terms of both reusing (getting) knowledge and sharing knowledge in a single chart.

Chart 7.8. Comparison of high- and low-value knowledge that users share or contribute with/to people and KMSs

Chart 7.9 shows the comparative results of the second type questions which asked participants to report which one is the greatest (most) source or target of high- and low-value knowledge. This chart indicates that technology is a more significant facilitator or intermediary of low-value knowledge than high-value knowledge. It indicates that when interviewees chose one as the source of the most low-value knowledge, the majority of them chose one of the KMSs, while they chose people for high-value knowledge. Accordingly, the majority of them chose people as the target of their own high-value knowledge for knowledge sharing. But as we discussed before, although they indicated that they share more low-value knowledge through KMSs than high-value knowledge, they still share more low-value knowledge with their colleagues than contributing to KMSs.
7.8. Summary of Findings

In this section the role of different intermediaries in high- and low-value knowledge flows are summarized. The relevant framework which combines and conclude the findings will be presented in chapter eight.

Knowledge and high-value knowledge. In this study the concept of knowledge referred to knowledge or information, tacit or explicit, required to resolve an applied problem in context; or any knowledge that is needed to do lawyers client-relevant jobs. High- and low-value knowledge were regarded as what were perceived by participants. To understand the high- and low-value knowledge sharing and reuse, two flows of knowledge – namely getting (finding and receiving) and sharing knowledge – are explored, investigated and partly measured by participants’ self-rating. Generally the interviewees regarded more tacit and direct knowledge which is ready to use or needing less processing to be high-value knowledge. Low-value knowledge also is the knowledge or information that mostly is necessary for the
users' jobs, but may not be needed immediately or may need more or less processing to be ready for the work at hand.

Knowledge flows. The research found that high- and low-value knowledge flow in relatively different ways. This study revealed that knowledge holders significantly share or tend to share their high-value knowledge directly with people, including their colleagues and superiors, rather than contributing to KMSs or using IT-based tools. Moreover, users mostly get high-value knowledge directly from their colleagues and superiors (people) through learning seminars, group meetings, informal networking, and daily interaction in the work environment. However, they get some high-value knowledge from KMSs especially external specialized professional databases that are subscribed to for internal use, and some special KMSs such as a precedents database.

Appropriate intermediary for high-value knowledge. Because high-value knowledge mostly flows directly, and is exchanged among the colleagues and superiors in practice groups, based on the findings given in chapters five and six, the Local HI is the more determinant and more appropriate intermediary for facilitating this flow of knowledge. This is because the Local HI can provide the opportunity for direct knowledge exchange by establishing the appropriate context and setting for socializing and externalizing knowledge by means of, for example, organizing seminars and meetings in addition to indirect facilitating such as promoting cultural settings and incentives systems. Moreover, the Local HI is in the best position to perform knowledge-oriented HI roles, which mostly facilitate high-value knowledge sharing and reuse. Furthermore, due to the Local HI's characteristics, he or she can even intermediate some high-value knowledge that flows through KMSs and tools by influencing the quality, currency, and meta-data of the knowledge in repositories. In other words, the Local HI can facilitate the turning of low-value knowledge into high-value knowledge. Therefore, high-value knowledge is more intermediated by the Local HI rather than the IT and Central HI.

Appropriate intermediary for low-value knowledge. This study found that lawyers get much low-value knowledge or information from or through KMSs as well as directly from their colleagues. The IT which includes KMSs, is an appropriate intermediary and facilitator for low-value knowledge, or explicit knowledge. The intermediation of IT is necessary for this type of knowledge because they are usually too much and only technology can facilitate their collection, storage and usage. Also, because they are explicit, or codified and tangible knowledge, the best intermediary is technology. As we found in chapters five and six, the Central HI with technology-oriented roles is in a better position to facilitate and manage the IT intermediary for knowledge sharing and reuse. Although the Local HI is involved in some tasks related to KMSs and KM tools, mostly the IT-relevant facilitation of technology use can be best done by the Central HI. Therefore, IT and the Central HI are the appropriate intermediaries for low-value knowledge.
Some considerations. This study is not arguing that the low-value knowledge is useless knowledge, in many cases they are vital for experts to accomplish their tasks. They may need low-value knowledge or information, but maybe it requires more processing to be applicable for their works—KMSs are very useful in helping knowledge workers in this regard. Moreover, the study does not argue that KM-relevant IT has less value; nowadays working without IT is impossible, as data from the case study show. However, in this case study, IT is not well regarded or used as facilitators of high-value knowledge sharing and reuse. As a result, KMSs and KM tools, although necessary for better facilitating knowledge sharing and reuse, cannot replace other methods of knowledge exchange, especially for high-value knowledge, such as direct contacts in seminars and meetings, which are facilitated mostly by the Local HI.

7.9. Discussion of the Findings

The result of the case study has confirmed the conceptual framework of the study in terms of high-value knowledge and tacit knowledge. As described in chapter two according to the literature, tacit knowledge is mostly regarded as high-value knowledge, for example, Pfeffer and Sutton (1999) believe that tacit knowledge is important knowledge. Similarly, the result of this empirical study indicates that relatively, tacit knowledge is considered as higher value knowledge than explicit knowledge; although the high-value knowledge is not limited to tacit knowledge, and not all tacit knowledge is high-value knowledge. Generally, knowledge workers regard tacit knowledge as high-value knowledge; and explicit knowledge as knowledge of less value.

In addition to confirming the study’s initial framework practicality, the contribution of this study or the new understanding that it adds to the body of knowledge is as follows: First, this study found that high-value knowledge flows through different paths to low-value knowledge; high-value knowledge flows mostly outside of the KM technologies through direct contacts while low-value knowledge flows through technologies such as KMSs. Second, the novel contribution of this study is assigning different types of intermediary which were developed in the first part of this research for these flows; that is, high-value knowledge flow should and can be facilitated and intermediated by the Local HI and low-value knowledge should and can be facilitated and intermediated by IT and the Central HI in a large multi-unit law firm.

Therefore, in this study, not only are the knowledge intermediaries identified and described, but their roles in different flows of knowledge in terms of value are explained. Thus, if the organization wants to increase and improve high-value knowledge sharing and reuse (flow) it should invest in or establish Local HIs and/or knowledge-oriented HI roles.
The last two chapters categorized and explained two distinct typologies of HIs in the process of intermediating knowledge sharing and reuse, which provide us with a better and deeper insight for managing knowledge, the strategic resource of an organization. This chapter further improved our understanding through clarifying HIs' impacts or intermediation in different flows of knowledge.

As mentioned previously, IT is an important and inevitable intermediary in facilitating flows of knowledge and information. But it was found in this study that it is not an adequate intermediary for facilitating all types of knowledge sharing and reuse. It is not the main and determinant facilitator in high-value knowledge sharing and reuse, other types of intermediaries, namely, Local HIs, are more dominant and effective.

In our initial research framework we argued that IT and technology-oriented HIs are the appropriate intermediaries for low-value knowledge sharing and reuse, and the knowledge-oriented HI is appropriate for high-value knowledge. The result of the practical case study confirmed this, and in addition makes it more precise, because two location-oriented HIs were also identified and incorporated in high- and low-value knowledge.

The issue of insufficiency of IT such as KMSs for KM and knowledge sharing and reuse is not new; many researchers such as Pfeffer and Sutton (1999) and O'Dell et al. (1998) found this before, and this study confirms their findings. For example, Pfeffer and Sutton (1999) argued that because essential knowledge for doing work is tacit and not easily described or codified, an increased emphasis on technology was not the answer. Furthermore, they criticized KM activities related to KMS because they believed that a formal system could not easily store or transfer tacit knowledge. This study argues that IT is not able to facilitate important, high-value and tacit knowledge, which is consistent with Pfeffer and Sutton's argument.

In addition, this study confirms the idea of O'Dell et al. (1998) who suggested that if the knowledge is more tacit, then less high-tech mechanisms is the solution. That is one of the reasons why we offer Local HIs and knowledge-oriented HIs rather than technology as a solution for tacit or high-value knowledge sharing and reuse.

Moreover, the matter of transferring and exchanging tacit knowledge directly through socialization has been studied before, mainly by Nonaka and Takeuchi (1995). This study also argues that creating settings or situations for socialization which can be by face-to-face contacts in meetings and the like, is appropriate for tacit knowledge or high-value knowledge sharing and reuse, which is not possible through IT; Local HI can be appropriate intermediary for this matter.

This study's findings regarding tacit knowledge and technology are in accordance with some important researches in this area. For example, Hislop (2002) argued that
for tacit knowledge sharing, which may be considered high-value knowledge, there is a need for a high level of social interaction, but for explicit knowledge sharing, the IT systems can be used; however they argued that there is not any completely explicit knowledge because all knowledge is partly tacit, so IT-based knowledge systems should be supported by other mechanisms. Therefore, IT cannot be the only and adequate knowledge intermediary for knowledge sharing. Tacit knowledge is unique and for externalization and exploitation, the formation of a community of practices and facilities for cross-functional teams is needed (Mohamed et al., 2004). This study, while confirming their findings, introduces and suggests a dedicated HI (Local HI) with specific roles (knowledge-oriented HI) in each practice group or community of practices to provide these mechanisms; because knowledge sharing and reuse needs an enabling context and appropriate organizational environment which can be promoted by the Local HIs.

Not many studies investigated and discussed the knowledge sharing and reuse in terms of value. One of the studies that use the concept of high-value knowledge was conducted by Ford and Staples (2006). The findings of our study are mostly consistent with them in this regard. Their study found that the target of shared knowledge is a very important factor, because people usually differentiate between sharing knowledge directly and sharing knowledge to unknown others (such as KMSs and mass emails), this was found and confirmed in this study as well. So, individuals generally like to share their high- and low-value knowledge with their close friends or colleagues for different reasons. This study found that generally most people do not like to share any type of knowledge to KMSs, rather they like to share directly, and this is more intense when it comes to high-value knowledge. Knowledge workers want to share knowledge with people they know probably because they expect reciprocity or appreciation and recognition which is usually lacking when they contribute to public KMSs.

Furthermore, the results of this study are consistent with the finding of Cross and Sproull (2004) who found that 85 percent of the managers in the context of projects get their important knowledge for successful completion of projects from people rather than repositories. We found in the case study that a majority of people get their high-value knowledge directly from their colleagues and superiors rather than KMSs.

Moreover, this study is consistent with the result of Ford and Staples (2006), in that it found that a majority of knowledge holders do not like to contribute their high-value knowledge to generalized others such as knowledge repositories and Intranets. So they do not prefer to use publicly available IT-based KMS as intermediary for high-value knowledge contribution. This study also found some other reasons why people do not use IT for knowledge contribution. These reasons include the burden of learning and using new technology and time shortage of staff. Therefore, not only do staff not use more KMSs but they also do not use the KM tools such as discussion
boards much which is relatively different from contributing to KMSs. This may change in the future due to emergence of the new IT-savvy generation.

Ford and Staples (2006) study has similar findings with our research but, this study goes one step further and introduces the way to facilitate more and better high-value knowledge sharing and reuse. The result of the previous two chapters identified different intermediaries and roles, enabling us to realize and understand the suitable intermediary and its functions for facilitating more high-value knowledge sharing and reuse, which is an important contribution of this study.

### 7.10. Summary

This chapter answered the third research question, “whether there are any significant difference among knowledge intermediaries in terms of value of knowledge that they facilitate or intermediate”. To do so, with support of the case study evidence first the flows of high- and low-value knowledge reuse and sharing were identified and explained, then the intermediaries that facilitate or better suit the intermediation of these flows were clarified. As evidence, two types of data were used to support the argument: interviews, the participants’ ideas about the high- and low-value knowledge flow (main evidence), and the quantitative data that measured and indicated the sources, targets and intermediaries of high- and low-value knowledge.

At the beginning of the chapter, the concept of high- and low-value knowledge and the IT for the purpose of this study was clarified. High- and low-value knowledge are what knowledge workers perceive them to be. To understand the high- and low-value knowledge flows, two flows of knowledge, namely, getting (finding and receiving) and sharing knowledge, are explored and investigated and partly measured by participants’ self-rating. Generally the interviewees regarded more direct and tacit knowledge sharing and receiving as high-value knowledge.

The study found that there are relatively different flows for high- and low-value knowledge in the law firm studied. Knowledge holders significantly share or tend to share their high-value knowledge directly with people, including their colleagues and superiors rather than contributing to KMSs or using IT-based tools. Therefore, for sharing high-value knowledge, IT is not a suitable intermediary. Moreover, users mostly get high-value knowledge directly from their colleagues and superiors (people) through learning seminars, group meetings, informal networking, and daily interaction in the work environment. However, they get some high-value knowledge from KMSs, especially those external, professional databases that are subscribed to for internal use, and the Precedents Database.

Because the high-value knowledge mostly flows directly, and is exchanged among the colleagues and superiors in practice groups, the Local HI is more the determinant and appropriate intermediary to facilitate this flow of knowledge. Local HIs (can)
provide the opportunity for this direct knowledge exchange by establishing and organizing seminars and meeting or interaction settings. Moreover, Local HI's, who are in the best position to perform the knowledge-oriented HI roles, can facilitate more high-value knowledge sharing and reuse. Also, due to the Local HI's' unique characteristics, they can even intermediate some high-value knowledge that flows through KMSs and KM tools by influencing quality control and meta-data of the knowledge in KMSs. So high-value knowledge is facilitated and intermediated more by the Local HI rather than through IT and the Central HI.

This study found that lawyers get much low-value knowledge or information from KMSs and their colleagues. The IT, including KMSs, is an appropriate intermediary and better facilitator of lower value knowledge which is sometimes necessary for the users' jobs. Central HI's with technology-oriented roles are in a better position to facilitate and manage the IT intermediary for knowledge sharing and reuse. Thus the Central HI is also appropriate intermediary for low-value knowledge in the knowledge-intensive multi-unit law firm studied.
INTEGRATING FINDINGS: TWO FRAMEWORKS

8.1. Introduction

This chapter combines and integrates the findings of the research presented in the last three chapters and proposes two frameworks. It is organized in several sections. Section 8.2 proposes and describes the first conceptual framework regarding HI types and roles in successful knowledge reuse and sharing. Section 8.3 proposes and explains the second research framework regarding intermediaries and high-value knowledge.

Section 8.4 discusses the theory type of research and generalizability. Section 8.5 discusses the findings regarding the four important knowledge intermediary studies relevant to this research. It clarifies the study’s insights and contributions to the larger body of knowledge. Section 8.6 summarizes the chapter briefly.

8.2. Conceptual Framework of HIs for Successful Knowledge Reuse and Sharing

The findings of this exploratory study provide a detailed description of the types and roles of HIs in facilitating organizational knowledge reuse and sharing within the context of the case study organization. The HI typology or classification that was developed in chapter five, and the HI typology that was developed in the initial framework in chapter two and further developed in chapter six, are integrated to present the first research framework in this section.

This study found two types of HIs: the first type is the Central HI. Central HI includes the KM team members of the organization including people such as librarians, and KM and KMS consultants. The primary and main knowledge facilitation role of Central HIs is the technology-oriented role, which mostly facilitate the usage of IT for knowledge reuse and sharing. The relevant functions to the technology-oriented role were developed and explained in chapter six. Nevertheless, Central HIs perform some knowledge-oriented functions as well.
The presence and importance of a technical intermediary or IT and related infrastructure, which includes for the most part shared IT-based KMSs and KM tools for all practice groups, both enables and requires Central HI intermediation. Moreover, due to the interaction of the Central HI with multiple practice groups, they are able to facilitate knowledge reuse and sharing at an organization-wide level, as well as to bridge boundaries among the practice groups. In bridging boundaries, Central HI intermediates KM and IT knowledge and best practices as well as some business knowledge.

Central HIs who have the KM and IT expertise are positioned as intermediaries between IT-based KMSs and KM tools, some knowledge sources, and knowledge workers (lawyers), as well as among different practice groups. Moreover, they broker between the IT department of the firm and knowledge workers and practice groups.

The second type of HI is the Local HI. Local HI is a person (or perhaps more than one person) who is internal to each specialized business practice group and who is informally or formally assigned to the intermediation roles (intermediation of knowledge reuse and sharing) within a particular group. This person usually is (or should be) a practitioner / knowledge worker who dedicates part or all of his/her time to knowledge intermediation.

Local HIs are positioned as intermediaries mainly among knowledge workers inside the group and they have unique characteristics for the intermediation. Because they are in a unique position in the units and have specialized knowledge of the group’s business and context, are close to the experts, and have relatively simple IT and KM knowledge, they enable better intermediation. Because these capacities are lacking in the Central HI, this second type of HI, the local HI, is required for successful knowledge reuse and sharing in a knowledge-intensive multi-unit law firm. Furthermore, they are in a brokering position between their own group members and the Central HI and possibly also other practice groups. The primary and main knowledge facilitation activities or roles of the Local HI occur through the knowledge-oriented roles that are non-IT-relevant facilitation. The knowledge-oriented functions was developed and explained in chapter six.

Figure 8.1 summarizes these findings and depicts them as a conceptual framework of knowledge intermediation by different HIs, with different roles, and its consequences. The left side of the Figure shows that, the two types of HI, namely the Central HI and the Local HI need to be involved in intermediating knowledge reuse and sharing. The middle box of the Figure shows the two major types of intermediary role which require to be performed by these HIs (these two roles types can also be regarded as the types of HI). The right side of the Figure shows the result of the intermediation process, which is successful knowledge reuse and sharing. The Figure illustrates using arrows to show that for successful knowledge reuse and sharing, the Central HI should primarily perform technology-oriented roles and the Local HI...
should primarily perform knowledge-oriented roles. However, the dashed arrows show that some functions in each category should be performed by the other HI. Although not depicted in the framework, it appears that the Central HI, with technology-oriented roles, improves mainly knowledge reuse, whereas the Local HI, with knowledge-oriented roles, improves mainly knowledge sharing.

Figure 8.1. First conceptual framework for understanding HI types and roles in successful knowledge reuse and sharing

In addition, the framework shows the structural and IT (intermediary) conditions of knowledge intermediation in which the framework is developed and works. The knowledge intermediation by the Central and the Local HI is conditioned by the existence of the multiple decentralized business units or practice groups, and a firm-wide, centralized or federated KM governance structure for the whole organization. Another prerequisite of knowledge intermediation is the existence of a shared technical intermediary or IT infrastructure and mainly shared KMSs and KM tools, because the shared IT-based KMSs and tools provide the setting both for knowledge intermediation between users of any single unit and knowledge intermediation among the different units. Without the shared KMSs or technical intermediary there would
be little opportunity for knowledge facilitation, especially by the Central HI whose facilitation depends mostly on the technical intermediary. Therefore, these structural and IT conditions on the one hand necessitate the two types of HI, and, on the other hand, provide the setting and enable the HIs to perform the technology-oriented and knowledge-oriented HI roles for successful knowledge reuse and sharing.

The last condition of the framework concerns the type of organization, which is a knowledge-intensive large multi-unit (law) firm, in which every practice group needs and uses relatively different and specialized knowledge. So, as Southon et al. (2002) recommend, in developing models or theoretical frameworks of KM, this study has considered the structure, type and the organizational knowledge of the organization. The typologies of the HIs were justified and described in detail in chapters five and six.

8.3. Conceptual Framework of Intermediaries and High-and Low-value Knowledge

To summarize and integrate the entire findings of the study, Figure 8.2 illustrates the second research framework, which depicts knowledge intermediaries and their roles in high- and low-value knowledge reuse and sharing facilitation. The Figure generally indicates how high- and low-value knowledge flows from sources to the users. It also shows the flow of high- and low-value knowledge and the influences of different intermediaries on these flows. The high-value knowledge flow is shown by green arrows which illustrate (by thickness) that more shared high-value knowledge goes directly to users than from KMSs. Also it points out that users receive more low-value knowledge than high-value knowledge from technical intermediaries (red arrows).
Three types of intermediaries facilitate or influence the knowledge flows from sources of knowledge (including internal and external sources and knowledge holders in the organization) to users. These are one technical intermediary (IT-based KMSs and KM tools) and, two HI's (Central HI and Local HI). Their facilitation in different flows of knowledge has been explained in chapter seven. In the framework, the IT facilitation is that in which explicit knowledge is collected and stored, or contributed by knowledge holders and then retrieved by users, or in which people use KM tools such as Wikis, discussion boards, email and so on to exchange knowledge. But the main areas of facilitation of HI's are labelled by numbers, from 1 to 3 for Central HI and from 4 to 6 for Local HI. Brief explanations of these intermediation areas are as follows:

A: Central HI's intermediation or facilitation areas (mostly facilitated by technology-oriented roles):

I- Facilitation roles in terms of KMSs, including technically designing, implementing, maintaining and improving KMSs and tools, and performing technology-oriented HI functions.
2- Facilitating users application of IT for example, by training, informing about KMSs and tools, assisting users in acquiring knowledge (research) and distributing knowledge such as news alerts and etc.

3- Knowledge capturing, such as providing library resources, and subscriptions to external knowledge sources.

B: Local HI's intermediation or facilitation areas (mostly facilitated by knowledge-oriented roles):

4- Facilitating and providing settings for direct knowledge exchange and socialization, such as seminars and meetings or social events.

5- Promoting knowledge sharing, and extracting and collecting knowledge through performing many of the knowledge-oriented functions such as encouraging, and promoting a knowledge sharing culture and environment.

6- Performing knowledge work on KMSs to increase the value of their contents, such as quality control, updating the contents, and adding metadata.

Therefore, the framework shows that, mostly high-value knowledge reuse and sharing (flows) are facilitated by a Local HI. Because by intermediation in areas 4 and 5, direct high-value knowledge flow is facilitated and improved, and by intermediation and facilitation in area 6, high-value knowledge flows from KMSs to users are facilitated and increased. Moreover, the framework illustrates that in the three areas 1, 2, and 3, human intermediation, which can be done performed by the Local HI, is necessary for facilitating mostly low-value knowledge or information flows. In addition, the framework also shows that the IT-based KMSs or tools, as representative of the IT intermediary type, are more likely to be intermediaries of low-value knowledge than high-value knowledge. It should be mentioned that, although the case study data support this framework, future research is required to test and confirm it.

8.4. Theory Type of the Research and Generalizability

This section explains the type of theory of this study and the generalizability issue of the case study findings. Gregor (2006) classified theories in information systems research into five types: analysis, explanation, prediction, explanation and prediction (EP), and design and action. The first part of this research, identifying intermediaries
and their roles, mainly represents the first type of theory, namely theory for analyzing. According to Gregor (2006), this type of theory is valuable and has a contribution when little is known about the phenomenon, which was argued to be the case in regard to intermediaries.

This study has therefore developed analyzing theory by identifying and describing HI taxonomies or typologies. Gregor (2006) maintained that “variants of this theory type are referred to as classification scheme, framework, or taxonomies” (p. 623). Accordingly, the outcome of the first part of the research was the presentation and description of two types of taxonomies.

The analyzing theory of this study is a typology rather than a taxonomy. Gregor (2006) considered taxonomy as similar to typology, but, based on other researchers’ ideas (Doty and Glick, 1994 in Gregor, 2006), she differentiated between them and maintained that a typology can be regarded as a type three (predicting) or type four (explaining and predicting) theory. This author regards the framework of this study more as a typology and probably a theory for predicting if not explaining. Not only does our theory identify and categorize different types of HI as well as different types of roles and functions, it also predicts that if these two types of HIs perform those two types of roles, successful knowledge reuse and sharing will have been achieved in a multi-unit knowledge-intensive organization. However, for this theory to be predictive it should be tested statistically in a wider population, because a single case study cannot confirm the predictive value of this theory.

This study does not explicitly explain the causal relationship, or at least does not focus on justifying and explaining the causal relationship. Nevertheless, the frameworks imply a kind of causal relationship. The last type of theory in IS that Gregor (2006) described is theory for design and action, which “gives prescription for construction and artifacts”. This study does not prescribe anything for constructing artifacts. Nevertheless, by identifying and presenting the list of knowledge-oriented and technology-oriented functions, many of which are related to the artifact (KMS), it does prescribe different functions to be conducted by HIs for successful knowledge reuse and sharing.

The type of theory in the second framework of the study (Figure 8.2) is type four, a theory for explaining and predicting (EP theory). The framework presented in the second part of this research, which focuses on the relationship between different intermediaries and high- and low-value knowledge reuse and sharing flows, reveals different findings and contributions of this study. First, it identifies, describes and demonstrates that there are relatively different paths for high- and low-value knowledge in the organization, and then determines which type of intermediaries are suitable for those flows, and finally briefly explains the reasons for this. Therefore, it explains that for facilitating high-value knowledge flows there is a need for particular types of functions to be performed by a particular type of HI (Local HI). In other
words, if a Local HI is assigned to a group in a large knowledge-intensive multi-unit organization and performs the knowledge-oriented HI roles, it is more likely that successful knowledge reuse and sharing will occur in terms of high-value knowledge. Therefore, we might argue that the type of theory in the second framework is type four: theory for explaining and predicting (EP theory). However, as it is mentioned above a single case study is not enough to prove the predictive value of the theory; it needs to be tested statistically in a wider population.

Practical generalizability: The question of generalizability in case study research was discussed in chapter three. According to Merriam and Associates (2002) generalizability in qualitative study is possible “If one thinks of what can be learned from an in-depth analysis of a particular situation or indicates how that knowledge can be transferred to another situation” (p. 28). Likewise, Yin (2003) maintains that “the description and analysis of a single case often suggest implications about a more general phenomenon” (p. 144). This study provides many lessons that can be useful for both practice and theory. Therefore, the findings of this study can be of interest of other similar organizations which are discussed in the discussion sections of the result chapters as well as this chapter. Especially as it is mentioned in chapter three the case of this study is a typical large knowledge-intensive multi-unit law firm and according to Yin (2003) “the lessons learned from this case study are assumed to be informative about the experiences of the average person or institution” (p. 41).

Moreover, according to Merriam and Associates (2002), “case to case /read or user generalizability” is the most common approach to generalizability in a qualitative study, in which “readers themselves determine the extent to which findings from a study can be applied to their context” (p. 29). In this regard, the researcher should provide the research context as was done in chapter four and other parts of this thesis. Moreover, the findings of this study have been drawn from the case of a multi-unit large law firm in which there is a central KM department and many different business units or divisions. Therefore, the findings of this study are more useable indirectly in similar types of organizations, although there are still some possible useful lessons for other types of organizations as well. The specific practical implications of this study are discussed in chapter nine.

8.5. General Discussion: Locating and Discussing the Study’s Findings in the Literature

Previous studies have emphasized the importance of knowledge reuse and sharing for organizational performance and competitive advantage. Knowledge reuse and sharing, as well as human agents and technical infrastructure, are important components of organizational KM. Davenport et al. (1998) identified eight main factors of successful KM projects in organizations. One of these factors is having and implementing a technical and organizational infrastructure, which is addressed in this study. In explaining this factor, Davenport et al. (1998) pointed out not only the
importance of but also the difficulty associated with human agents and their roles in KM. These have been elaborated in this study.

**Brief history of the research:** In the KM and IS literature, many factors have been found that influence knowledge reuse and sharing. In chapter two, these have been categorized into three main groups: organizational, individual and KMS relevant factors. We have argued in chapter two that the technical and human intermediaries are the most important factors for successful knowledge reuse and sharing. Thus, in this study we have presented the intermediary or agent approach or perspective for effective knowledge reuse and sharing. In other words, we have examined improving knowledge reuse and sharing through the lens of the intermediary.

This agent-mediated perspective of knowledge reuse and sharing is a novel contribution of this study. Intermediaries in knowledge reuse and sharing have not been well explored and clarified in the literature, as indicated in chapter two.

The review and analysis of the intermediary-related literature indicated a gap in the literature and the need, therefore, to explore and clarify the concept of intermediaries in knowledge reuse and sharing. As the first step, in recognizing and clarifying the concept of the intermediary, we have developed a primary taxonomy of knowledge intermediaries in a conceptual framework based on the literature analysis in chapter two. Based on that initial framework, two main types of intermediaries identified, human and technology, which intermediate knowledge reuse and sharing. To understand better the intermediation process, we have identified a role-oriented taxonomy for HIs. This categorization divides the HIs into two types: the Knowledge-oriented HI, and the Technology-oriented HI, based on the roles they play in the facilitation. Moreover, also based on the literature review, we have collated a list of functions that HIs should play to facilitate knowledge reuse and sharing.

A case study has been conducted to explore the concept of intermediaries and their roles in the practical world, the findings of which are presented in chapters five, six, and seven and integrated and synthesized above. From these the two conceptual frameworks are proposed.

At the end of each result chapter (five to seven), the relevant findings are discussed in relation to the literature. This section discusses the findings of this study regarding the four important intermediaries' studies relevant to this research. First, the theory of knowledge reusability of Markus (2001), which this research extends, is discussed. Then the findings on knowledge brokering by Pawlowski and Robey (2004), knowledge intermediaries in healthcare by Fennessy and Burstein (2007), and the knowledge market of Davenport and Prusak (1998) are discussed.
8.5.1. Extension of theory of knowledge reusability of Markus

This study has extended the theory of knowledge reusability. Markus (2001) developed the primary theory of knowledge reusability and has called her study the first step toward the theory of knowledge reusability. This study, which is inspired by her work, has extended part of the knowledge reusability theory. In other words, it has taken another step in developing the theory. This study focuses on one particular aspect of the theory, namely, the concept of the intermediary, which was not elaborated on in the Markus (2001) study, in spite of the critical role of intermediaries in knowledge reuse and sharing.

Markus (2001) divided intermediaries into two major categories, human and technical. This study has found those same categories of intermediaries, consistent with the Markus study, but sheds further light on the intermediaries. In particular it has clarified what or who the possible intermediaries for knowledge reuse are in the context of a knowledge-intensive multi-unit firm. This is new.

The current study extends the knowledge reusability theory by identifying and developing two typologies for HI: the role-oriented typology, and the location-oriented typology. Each typology looks at the HI from a different perspective. Moreover, the relationship between these two taxonomies has been considered and, based on the combination of these two, the first research framework is presented.

From the perspective of the functions that HI can and should perform, whereas Markus (2001) did not focus on the roles of intermediaries, this study identifies and proposes the role-based taxonomy for the HI and provides relatively comprehensive functions for HI in facilitating knowledge reuse and sharing. Markus (2001) stated that “it is important to understand the roles that [human] intermediaries can, should, and do play in successful knowledge reuse” (p. 84). She outlined some of the roles based on a literature review. The current study extends the theory of knowledge reusability by identifying and listing the most important and necessary functions of HI. These functions are divided into two types, knowledge-oriented and technology-oriented. Therefore, in this regard too this study extends the Markus’ theory, by developing an understanding of the ways in which HI facilitate knowledge reuse and sharing.

HI, based on the role that they play, are divided into two groups, knowledge-oriented HI and technology-oriented HI. This taxonomy emphasizes the different nature of the roles and functions that are required for the HI to facilitate effective knowledge reuse and sharing. This study indicates that both types are required and should be performed in conjunction with each other in the case studied. Technology-oriented roles indirectly reveal the importance of the IT intermediary, while the knowledge-oriented roles show that facilitation in knowledge reuse and sharing is not
just technology-oriented. There is also a need for the non-technological functions of HIs.

As to who can and should be the HI in an organization, a location-oriented typology or taxonomy of HIs is proposed. In this taxonomy, HIs are divided into Central HI and Local HI categories, which is relevant and applicable to a large knowledge-intensive multi-unit organization. This taxonomy indicates that for successful knowledge reuse and sharing both types of HI are necessary because each has its own unique capacity and situation; together they facilitate and improve knowledge reuse and sharing.

This taxonomy complements the first HI's taxonomy because of the match proposed between them which contributes to better facilitation of knowledge reuse and sharing. The findings suggest that Local HIs should perform the more knowledge-oriented roles. On the other hand, the Central HIs should perform the more technology-oriented functions. However, there are some functions that do not follow this rule.

Another aspect in which this study extends the theory of knowledge reusability is its wider coverage of knowledge reuse facilitation. In Markus' theory, there was a greater focus on knowledge reuse flow. This study also incorporates the knowledge sharing flow because knowledge sharing is important for an organization and these two flows are inextricably linked to each other. Moreover, in her theory, Markus considered explicit knowledge reuse through KMSs whereas this study has also investigated tacit knowledge and knowledge flows outside of KMSs.

The exclusion of tacit knowledge and knowledge sharing by Markus might be considered a deficiency in the theory of knowledge reusability, this might be because it was just the first step toward such a theory as she maintained. However, her theory covered other important dimensions such as knowledge reuse situations. It may not have been possible for her to include and clarify all aspects of the theory, namely, intermediaries, knowledge sharing, and tacit knowledge.

Given the differences between the theory that is developed here and the Markus knowledge reusability theory, the findings of this study might be regarded as a new theory in knowledge reuse. Because this study focused on the concept of the intermediary or agent as well as on knowledge reuse and sharing, it may be called a Theory of agent-mediated knowledge reuse and sharing.

One of different aspects of this study from the Markus theory is knowledge reuse situations. Markus classified the situations of knowledge reuse into four categories: Shared Work Producers, Shared Work Practitioners, Expertise-Seeking Novices, and Secondary Knowledge Miners. Although this study did not purposefully investigate or focus on the knowledge reuse situations of Markus, to more extent, they were not recognized as important or applicable in our study. The reason maybe is the context
of our study. These different knowledge reuse situations were not simply appropriated in a knowledge-intensive large multi-unit law firm (and maybe in this type of industry as well), or they may need some revision for this type of organizations. This categorization is mainly based on whether or not the users have the general, specific, and contextual knowledge of knowledge producers. This varies in a knowledge-intensive law firm due to the many different natures and types of tasks or cases in each practice group.

However, there are different knowledge reuse situations in this type of organization as well. For example, in a multi-unit law firm, each unit can be regarded as compromising partly shared work producers and mostly shared work practitioners (situations one and two), which, to some extent, have different knowledge and KMSs needs, as well as different facilitation or intermediary types and roles. This study argues that different units or specialized areas of work in a knowledge-intensive organization need a special type of intermediary, namely the Local HI, to facilitate knowledge reuse and sharing. So, while Markus focused on having a special knowledge repository for each type of reuse situation, we have focused on having special HIs for each unit.

Finally, Markus made three observations about the role of [human] intermediaries in successful knowledge reuse, which are to some extent consistent with the findings of this case study. First, according to the data, HIs still experience “demanding jobs, lack of cooperation, and lack of appreciation” (p. 86) as Markus observed. This study hopes to promote their situations both in practice and in theory. As the second observation, Markus stated that in spite of the allocation of many organizational resources “some tasks likely to facilitate effective knowledge reuse may remain undone”. According to this case study, few resources are allocated to knowledge intermediation because the organization may not be inclined, for example, to invest in employment of a Local HI rather than in other more immediate money-earning activities. Moreover, confirming the Markus observations, some facilitation roles, tasks or functions were required in this case for successful knowledge reuse and sharing, but had not yet been performed or had not been performed satisfactorily.

As the last observation, Markus (2001) confirmed that the role of intermediaries is not only important for “discretionary repository” situations in which knowledge is documented for others, but also for situations involving shared work producers. According to this study, not only are the intermediaries important for all situations of knowledge reuse and sharing, but also, for the first two reuse situations of Markus, a special type of intermediary is required: the Local HI. Thus, the role of the HI is necessary in every situation, even in the first situation where Markus primarily argued that the role of incentives is more important than the role of the intermediary. Moreover, the time pressure on knowledge workers in a knowledge-intensive organization is another reason that necessitates the role of intermediary in these situations.
8.5.2. Knowledge brokering of Pawlowski and Robey

The findings of this case study are in several aspects consistent with those from the study by Pawlowski and Robey (2004). In other words, there are some similarities, but there are also some differences. Pawlowski and Robey (2004) investigated the knowledge brokering concept and roles, and presented a conceptual framework for knowledge brokering from the perspective of IT professionals (further explanation of their study and their framework appears in chapter two). However, our study did not focus on the IT professional but, rather, on the most significant possible types of people who intermediate knowledge reuse and sharing, both have contributed to the literature on knowledge reuse and sharing and intermediaries.

**Similarity and consistency:** Pawlowski and Robey (2004) maintained that human and IT intermediaries alone are not able to fulfil the needs of knowledge transfer or knowledge flow. Rather, the combination of technical object and human brokering activities leads to knowledge transfer. The findings of this study are consistent with those of Pawlowski and Robey (2004) and emphasize that both technical and human intermediaries are required for successful knowledge reuse and sharing. Indeed, the combination of these two intermediaries provides the opportunity for intermediation functions. Although this study focuses on the HI, the description and clarification of technology-oriented HI roles imply the importance of the technical intermediary.

This study also confirmed another similarity that for knowledge intermediation two conditions are required. The first is a structural condition, which in the Pawlowski and Robey (2004) study was the decentralized business units. The multi-unit large organization in our framework was consistent with this condition. The second is a technology condition which Pawlowski and Robey (2004) considered "shared information systems as boundary object." IT-based KMSs and KM tools considered in this study satisfied this condition.

However, there is one significant difference between the structural conditions of the Pawlowski and Robey (2004) study and those of this study, which underpins the main difference between the two studies. Whereas Pawlowski and Robey (2004) focused on the IT professional as knowledge broker, this study identified KM professionals (Central HI) and the Local HI as intermediaries. Moreover, like the Pawlowski and Robey (2004) model, this study, related the knowledge intermediation to the existence of a centralized KM department, which they regard as the federated IT structure. This point is discussed further below.

**Differences and extension:** This study differs from the Pawlowski and Robey (2004) study in several respects. They conducted their study in the context of a large manufacturing and distribution company, whereas this study was conducted in a large law firm. There are significant differences between these two types of organization, in terms of knowledge and KM. A law firm is knowledge-intensive organization and,
for the most part, its input, process and output are knowledge or knowledge-oriented and the employees are knowledge workers. In contrast, manufacturing and distribution companies are less knowledge-intensive. This is probably why the intermediary framework for these two types of organization differs. This also implies that the type of organization is an important condition for a knowledge intermediation framework.

Knowledge reuse and sharing in a knowledge-intensive law firm necessitates subtle and determinant intermediaries. According to our findings in the context of a law firm, the KM department and its staff rather than the IT professionals play the central and formal intermediary roles, although the IT professionals are included in the Central HI category. But intermediation is not limited to IT professionals because other staff, such as KM professionals and librarians, play a more important role in knowledge brokering. IT professionals who have KM knowledge as well are Central HI, and purely technical IT professionals who do not deal with users may not be included as Central HI in our framework.

Moreover, in this study we found another important type of intermediary, the Local HI, who complements the knowledge brokering in the organization. These two notions, broadening the Central HI from IT professionals to the whole KM team, and introducing the Local HI as another knowledge intermediary, is major contribution of this study as well as the difference in our findings from those of the Pawlowski and Robey (2004) study.

Another difference between this study and that of Pawlowski and Robey (2004) is the holistic perspective of this study in regard to knowledge intermediation. They focused largely on knowledge transfer around and/or through the technical intermediary or information systems, whereas there is also some knowledge transfer (sharing and reuse) outside the IT-based system. By introducing the Local HI type of intermediary and knowledge-oriented HI roles, this study covered both tacit and explicit knowledge reuse and sharing. Furthermore, this study presents more comprehensive functions for the HIs, and differentiates between whether they are knowledge-oriented or technology-oriented functions and assigns each function to a type of HI with the capacity for better performance, while in the Pawlowski and Robey (2004) study intermediation roles are limited to four functions. Moreover, it seems that they did not elaborate the functions of HI as much as this study did.

A further difference between this study and that of Pawlowski and Robey (2004) is that they focused mainly on direct knowledge intermediation or brokering, while this study has also considered indirect knowledge intermediation, which includes all facilitation of knowledge reuse and sharing. This also reflects the holistic perspective of this study in regard to knowledge intermediation.
Pawlowski and Robey (2004) argued that the IT professional’s roles should be reevaluated and not focused merely on designing systems or providing tools for KM processes. Another potential role for them is knowledge brokering because of their strategic position in knowledge transfer through connecting isolated units with shared systems. This study shows that in a knowledge-intensive law firm, the IT professionals are equipped with KM knowledge as well and perform some knowledge facilitation and brokering roles. But, even KM professionals or staff still do not explicitly appreciate the knowledge brokering and facilitating role in appropriate and comprehensive ways. The findings of this study show, for example, that librarians perform the knowledge brokering roles in the KM team better than others.

As mentioned in chapter one, Pawlowski and Robey (2004) called for future research to involve the business units in research, rather than just focusing on the possible brokers in the organization, which in their case was the IT professionals. We have considered both the intermediaries and the users or practice groups and, more importantly, focused on the KM team rather than just the IT professionals (who in this firm also partly perform the functions of the intermediary).

8.5.3. Knowledge intermediaries in the healthcare study of Fennessy and Burstein

Another intermediary study in the literature is the study of Fennessy and Burstein (2007) who researched knowledge intermediaries in the context of healthcare KM. The intermediary notion that they considered is more direct knowledge intermediation and fits better with the librarians’ roles in the Central HI team in this study, although some of the functions that Fennessy and Burstein (2007) assigned to intermediaries in healthcare are comparable with the roles of the Local HI in this study. Because there are some differences between the business and knowledge of health organizations and the business and knowledge of a multi-unit knowledge-intensive law firm, it is understandable that different forms of intermediaries are required. However, there are some similarities between these two contexts. These include the time pressures and workloads of busy knowledge workers, the highly specialized nature of the knowledge, and the need to process an enormous range of different information and knowledge, which requires the contribution of intermediaries.

Like the present study, the Fennessy and Burstein (2007) study emphasizes the importance and the impact of intermediaries on better knowledge reuse. They argued that in the context of healthcare KM, intermediaries can assist decision making in the organization by understanding the healthcare and decision-relevant policies. In the context of this case, Local HIs usually have a better understanding of the decisions-relevant policies in law practice, not Central HIs, such as librarians.
This study has confirmed the findings of Fennessy and Burstein (2007) regarding the importance of librarians and their roles. Librarians, as members of the Central HI category, in the context of a law firm, are similar to the librarians in healthcare, in that their position enables them to facilitate knowledge flows because they have skills and expertise in accessing knowledge resources and locating knowledge for users. In addition, they compensate for the time shortage of users and, in most instances, find knowledge for them quicker and easier than users themselves. The research for individuals, which was identified as one of the knowledge-oriented functions of the Central HI, is performed by librarians in the study of Fennessy and Burstein (2007).

However, the intermediaries in their study, the librarians, take on some roles that are not usually appropriate for librarians from the Central HI category in a knowledge-intensive large multi-unit law firm. For example, one of the reasons for using intermediaries in healthcare is that sometimes practitioners do not have a clear picture of the problem, so they share it with intermediaries and with the help of the intermediaries clarify and articulate their information needs. In the context of a large law firm, the Local HIs can usually do this better because they have specialized knowledge of the area and are therefore able to help users in this respect.

Comparing the findings of this study with those of Fennessy and Burstein (2007), we realize that in a large law firm there is a need for another type of HI, which we call the Local HI, whereas in healthcare one type of HI may suffice. Moreover, comparison of these two studies reveals that Fennessy and Burstein (2007) assigned and expected knowledge-oriented roles from intermediaries, not technology-oriented roles. Another difference is that they focused more on knowledge reuse, rather than knowledge sharing, whereas we have considered both. One important role of the intermediary, emphasized by both studies, is the transformation of information into knowledge or turning low-value knowledge into high-value knowledge, for which we specify some knowledge-oriented functions for the Local HI.

The type of industry has an impact on KM and consequently on facilitating knowledge reuse and sharing. This study also empirically confirms that KM in a knowledge-intensive multi-unit law firm which is a type of professional and consulting firm, is different from other types of organizations in some respects because the role of individual tacit knowledge is more important in this type of organization. This is consistent with the findings of Baumard (2002), who compared four types of organization in regard to tacit knowledge, and the finding of Swart and Kinnie (2003), who investigated knowledge sharing in knowledge-intensive firms.

8.5.4. Knowledge market of Davenport and Prusak

Other well-known researchers who have observed the knowledge intermediary or broker are Davenport and Prusak (1998). This section discusses the findings of our study in regard to the knowledge broker identified by Davenport and Prusak (1998).
As reviewed in chapter two, Davenport and Prusak (1998) described the knowledge market in organizations in which three players, namely, buyers, sellers and brokers are involved in knowledge transactions. They stated that in this market the significant prices are reciprocity, repute and altruism in which trust plays an important role. According to this study, to have an active knowledge market and better knowledge transfer (sharing and reuse) in each level of organization (the whole and at each unit level), the organization must pay the price of facilitating knowledge reuse and sharing and in return reap the reward, in the organization’s performance. The price is investment in both technical (implementing and maintaining KMSs and KM tools) and HIs (appointing dedicated HIs such as Local and Central HIs).

In terms of librarians as important knowledge intermediaries, this study, confirms the finding of the Davenport and Prusak (1998) study. They argued that the corporate librarians are the hidden and common brokers, because they serve the whole organization as information guides. The corporate librarians broker two types of connections: people-to-people and people to text (people to KMSs as well). Usually, librarians are aware of the knowledge needs and information sources and, of their very nature they are natural brokers. This practical case study confirms that in a law firm librarians are the most important part of the Central HI and perform many knowledge-oriented HI roles, including the roles Davenport and Prusak considered for librarians. However, probably because our study was conducted in a knowledge-intensive multi-unit law firm, the importance of the librarian as knowledge intermediary was second to that of the Local HI. Nevertheless, it is possible to regard librarians as the most important type of intermediary in other kinds of organizations, or in organizations which make a Local HI. This study also confirms their view that organizations still do not place a high enough value on the role of librarians, as knowledge intermediaries or as knowledge workers.

There are some differences between the broker notion of Davenport and Prusak (1998) and the intermediary notion in this study. They regarded only librarians and managers as intermediaries, and probably considered only direct and immediate intermediation roles. This study, however, considered both direct and indirect knowledge intermediation activities. Intermediaries in this study are not just librarians and some managers. This study presents and explains the concepts of the Central HI and the Local HI in this respect.

8.6. Summary

This chapter has summarized and concluded the findings and discussed them in the light of the literature. In the first part, the framework of intermediaries in knowledge reuse and sharing, including two typologies of HIs was described. The framework proposes that, in a large knowledge-intensive multi-unit organization such as a law firm, to achieve successful knowledge reuse and sharing, both Central and Local HIs with knowledge-oriented and technology-oriented roles are required.
In the second framework, the conclusions of the study, in terms of intermediaries and high- and low-value knowledge, were presented. This argues that the Local HI is the most appropriate intermediary for facilitating high-value knowledge reuse and sharing, while IT and the Central HI are more appropriate in the case of explicit and low-value knowledge.

Also, the findings of the study were discussed, in relation to the previous important intermediary studies, such as the theory of knowledge reusability of Markus, and the contributions of this study were clarified. It is argued that this study extends the knowledge reusability theory. Moreover, in comparison to other intermediary studies in KM, this study is more comprehensive and broad because it covers both knowledge reuse and knowledge sharing, internal and external knowledge, tacit and explicit knowledge, as well as firm-wide level intermediaries and unit level intermediaries.

Moreover, a comparison of the findings of this study with other significant intermediary studies indicates that the type of organization, in terms of the industry that it belongs to (knowledge-intensive or not), the structure (multi-unit or not), the size (large or small), the knowledge and the business type, are all important in developing knowledge intermediary typologies and frameworks for successful knowledge reuse and sharing.
CONCLUSION

9.1. Introduction

This chapter briefly recapitulates and answers to the research questions in section 9.2. This is followed by explanations of the research contributions in section 9.3. In section 9.4 the chapter lists the implications of the research for practice. Section 9.5 discusses the limitations of the study, and section 9.6 presents recommendations for future researchers. Finally, section 9.7 provides a brief summary of the chapter and states the final conclusions of the study.

9.2. Answers to the Research Questions

This study started with three research questions. Each result chapter of the thesis (five, six, and seven) attempted to answer one of these questions. This section briefly reviews the questions and answers.

1- Who are the intermediaries or facilitators of knowledge reuse and sharing in a knowledge-intensive multi-unit organization?

The knowledge intermediaries for facilitating knowledge reuse and sharing are human and technology but this study places a greater emphasis on understanding the human intermediaries (HI). In response to this research question two typologies of HIs were developed which are reflected in the first conceptual framework which appears in chapter eight. The first typology emerges from the data and is based on the findings of the case study. This typology is location-oriented and divides the HI into two categories, based on the span of knowledge intermediation, according to whether it applies to the whole organization or to a specific unit within the organization. These two categories or types are Central HIs and Local HIs. The large knowledge-intensive multi-unit law firm studied has a group or a team who comprise the KM department; they are central and formally facilitate or intermediate knowledge reuse
and sharing. We call these intermediaries Central HIs. On the other hand, within the individual units or practice groups, a person or a group of people are usually involved, or should be involved, in the facilitation of knowledge reuse and sharing for their own specific unit. We call these intermediaries Local HIs. To achieve successful knowledge reuse and sharing throughout the organization, both types are required, because each type has unique characteristics which enable it to perform some roles and functions better than the other.

Moreover, as another typology, two types of HIs have been identified based on the nature of the roles that they play. These are the knowledge-oriented HI and technology-oriented HI. To achieve successful knowledge reuse and sharing, both Central and Local HIs should perform largely technology-oriented and knowledge-oriented roles respectively.

2- How can Human Intermediaries improve more and better knowledge reuse and sharing? (What roles and functions should they perform for successful knowledge reuse and sharing?)

Two general types of roles have been distinguished for HIs, including both knowledge-oriented and technology-oriented roles. For each role type, a set of functions particular to the role were identified and described in chapter six. Knowledge-oriented functions include five main functions and 24 sub-functions as shown in Figure 9.1. Technology-oriented functions include seven main functions and 13 sub-functions shown in Figure 9.2. For successful knowledge reuse and sharing, both types of roles and functions are necessary. Most of the knowledge-oriented HI functions can be better performed by Local HIs because of their understanding of the unit’s context, their closeness to users, and their possession of specialized knowledge of the unit. In contrast, the Central HI can better perform the technology-oriented functions as well as a few knowledge-oriented functions because they have expertise in IT and KM, and a firm-wide perspective.
Figure 9.1: Knowledge-oriented functions of HI

Knowledge-oriented Functions

Facilitating explicit knowledge reuse flow
- Introducing sources of knowledge outside and inside of the firm
- Capturing and collecting knowledge
- Helping knowledge holders to contribute
- Distributing knowledge
- Researching and providing knowledge for users individually
- Performing Library and subscription work

Encouraging knowledge sharing and promoting its culture
- Increasing awareness, and reminding users of the value of knowledge sharing and reuse
- Promoting and reminding about knowledge sharing and reuse
- Fostering the culture of KM and knowledge sharing
- Managing and providing incentives for knowledge sharing
- Encouraging knowledge holders to contribute
- Promoting and providing training in KMSs and KM works (non IT)
- Facilitating creation of appropriate working environment for KM activities

Providing tacit knowledge sharing facilities and settings
- Organizing learning seminars or team meetings
- Providing network facility and yellow page directory to connect experts
- Initiating and facilitating social events
- Facilitating knowledge generation

Performing Knowledge work on KMSs (Improving the usability/usefulness)
- Improving knowledge presentation in KMSs
- Ensuring the quality of knowledge in KMSs
- Adding metadata
- Updating contents of KMSs

Taking the responsibility of running KM and KMSs
- Encouraging and transferring best method of knowledge reuse and sharing
- Coordinating and collaborating intermediation with all parties

Coordinating the intermediation roles
Figure 9.2: Technology-oriented functions of HIs

- Improving better usage of technology
  - Making contribution to KMSs easy
  - Making knowledge finding easy (technically improving knowledge presentation)
  - Making KMSs user-friendly
  - Integrating KMSs into simple single or few platforms
  - Improving search facility

- Facilitating easy application of KMSs (better design and customizing)

- Introducing, designing and implementing KMSs and IT tools for knowledge reuse and sharing
  - Finding the knowledge reuse and sharing needs and technology solutions
  - Providing the IT and network infrastructure and protection for knowledge
  - Providing KMSs and tools for knowledge reuse and sharing
  - Providing communication and social networking technology

- Performing helpdesk services

- Assisting precedent development and uploading technicality
  - Assisting contribution to KMSs and updating them
  - Assisting in capturing and searching knowledge

- Helping users technically in using KMSs and Tools

- Running and maintaining the KMSs and KM tools
  - Training users in application of KMSs and KM tools
  - Advertising and informing about KMSs and IT tools
3- Is there any significant difference among knowledge intermediaries in terms of the value of the knowledge that they facilitate or intermediate? (OR which intermediaries are most common or suitable for high- and low-value knowledge sharing?)

There are, indeed, differences among knowledge intermediaries, in terms of facilitating and intermediating different valued knowledge flows in a large knowledge-intensive multi-unit organization. For intermediating high-value knowledge reuse and sharing the Local HI, with knowledge-oriented HI roles, is a more appropriate intermediary than IT and Central HI. Because people mostly share and reuse high-value knowledge directly from each other, rather than through IT, the Local HI is in the best position to facilitate this direct and tacit knowledge sharing by providing the direct contacts context through organizing seminars and meetings and promoting a knowledge sharing culture and working environment.

IT, and the Central HI, with their technology-oriented roles, are more appropriate and suitable intermediaries for facilitating lower value or explicit knowledge reuse and sharing. This is illustrated in the second research framework in Figure 8.2.

9.3. Contributions of the Research

This study makes several contributions to the body of knowledge. A central contribution is the development of an agent-mediated framework or theory of knowledge reuse and sharing. Attention is drawn to a new perspective or approach on KM, particularly in regard to managing, facilitating and improving knowledge reuse and sharing; this is called in this study the agent-mediated or intermediary perspective. Based on this perspective, a conceptual framework in understanding HIs, with six constructs (Figure 8.1): two intermediary types, two intermediary roles, and two intermediation outcomes (knowledge reuse and knowledge sharing), has been developed.

Second, the research provides empirical evidence to support the intermediary component of the knowledge reusability theory of Markus (2001) and extends the part of that theory regarding intermediaries significantly. This study not only confirmed the need for technical and human intermediaries for successful knowledge reuse, but also proposed further typologies of HIs, identified HIs subgroups roles, and functions in successful knowledge reuse and sharing in a knowledge-intensive multi-unit organization. Moreover, this study has considered both knowledge sharing and knowledge reuse, because of their inter-connection, taking them together to enrich the theory of knowledge reusability.

Third, this study is one of the very few (if any) extensive empirical investigations that explores and describes intermediaries in knowledge reuse and sharing in an organizational setting.
Fourth, this study identifies and describes an important type of HI, namely the Local HI, who is significant and even critical for successful knowledge reuse and sharing in a large multi-unit knowledge-intensive organization. To the knowledge of the researcher, this is the first study to recognize and describe its importance, roles, and characteristics.

Fifth, this study has identified and differentiated two major types of roles for HIs in the process of facilitating knowledge reuse and sharing. The two types of roles are the technology-oriented HI roles, and the knowledge-oriented HI roles. Moreover, the current study has identified, to a greater extent, a comprehensive list of functions for each role that should be performed by HIs to achieve successful knowledge reuse and sharing. These lists are generated based on the data, which reflected the needs of knowledge workers as well as the requirements of successful knowledge reuse and sharing processes in the firm studied.

Sixth the relationship between the two HI typologies is established. That is, an appropriate HI type (Local or Central HI) for each knowledge-oriented and technology-oriented function is identified and assigned. In summary, most of the knowledge-oriented roles can be best performed by Local HIs, while Central HIs are in a better position to perform most of the technology-oriented functions.

Although most of the functions described are not new, differentiating between them, and categorizing them into two types is new. Moreover, looking at them from the intermediary perspective, providing a comprehensive list based on the practical case study, and suggesting appropriate HIs for them is a contribution of this study to current KM research. All are found important for successful knowledge sharing and reuse but, nevertheless, differentiating between these two types of roles is important because the differentiation indicates that both are significance and that neither can be ignored.

Seventh, while most of the knowledge-oriented and technology-oriented functions have already been discussed in the literature, comparing the initial list of functions (chapter two) with the list found in the case study indicates that, some functions in the process of knowledge reuse and sharing have not been sufficiently appreciated or considered in the literature. These important knowledge-oriented functions are: organizing and running learning seminars or team meetings for knowledge reuse and sharing; researching and providing knowledge for users individually; and coordinating and collaborating on KM issues and intermediation with all parties. The important technology-oriented functions are: the integrating of KMSs into simple, single or a few platforms (as far as possible); providing and improving appropriate search facilities; advertising and informing staff about the KMSs and IT tools.

Eighth, exploring and explaining the relationship of knowledge intermediaries in different valued knowledge flows represent another major contribution of this study.
High-value knowledge flows through different paths to low-value knowledge; the former flows mostly outside of KM technologies through direct contacts, whereas low-value knowledge flows mostly through such technologies in a knowledge-intensive multi-unit organization. The novel contribution of this study lies in assigning the different types of intermediary, which were developed in the first part of the research, to these flows. In this respect, the second framework was developed in chapter eight to indicate the relationship between intermediaries and high-value knowledge and low-value knowledge reuse and sharing. The framework shows that the Local HI is more appropriate in intermediating high-value knowledge reuse and sharing, while IT and the Central HI are more appropriate intermediaries for low value and explicit knowledge reuse and sharing.

9.4. Implications for Practice

This study increased understanding about successful knowledge reuse and sharing and the role of intermediaries in this respect. It proposed new theory and has many implications for research in this area which were explained in chapter eight. Although the result of study is drawn from a single case study and cannot generalize to other organizations, as it is explained in chapter eight section 8.4, it can provide indirect lessons and insights for other organizations especially to the similar organization to the case study studied. In other words, the findings can be indicative for other organizations. Therefore in this section a number of implications for organizations, as well as for executives, managers, and KM professionals of mainly large knowledge-intensive, multi-unit organizations (particularly law firms) are outlined. Moreover, from the findings of this study IT professionals can learn about ways of dealing the IT and KM issues of with knowledge-intensive organizations. However, in considering the implications, the context-specificity of knowledge reuse and sharing and the subjectivity of high- and low-value knowledge, in addition to single case study, must be taken into account.

To manage and take advantage of knowledge as a strategic resource, organizations should take knowledge reuse and sharing seriously. Better knowledge reuse and sharing cannot occur by itself, it needs investment, and the main investment in a knowledge-intensive multi-unit firm is dedicating a person or a group of people as HIs for this important initiative. This study proposes that the intermediary perspective can lead to organizations realizing and appreciating the value of knowledge reuse and sharing as well as the roles of intermediaries in this respect.

The KM department, or the Central HI, who serves the whole organization, is essential in successful knowledge reuse and sharing, and provides and maintains KM, the library and the IT infrastructure. Nevertheless, the Central HI’s services should not be limited to these. The Central HI should focus on all general issues related to KM, and IT, with a general and firm-wide perspective. They should coordinate knowledge reuse and sharing in all units and transfer the knowledge and best
practices of KM and IT applications to all other units. Moreover, they should intermediate knowledge exchange among the different units of the organization.

This study found that, for many reasons, to succeed in knowledge reuse and sharing it is necessary to assign one or more dedicated persons from each practice group to facilitate knowledge reuse and sharing within that group. So, investing in a dedicated Local HI improves knowledge reuse and sharing considerably. This person should be an expert in the core business of the group, who is dedicated part or full time to knowledge intermediation work and, in fact, mostly knowledge-oriented roles.

While IT-based KMSs are necessary and very important in successful knowledge and information sharing and reuse, there are some issues that should be considered in this regard. First, it should not be placed too much emphasis on IT or be overestimated its value and roles. Second, KMSs and KM tools need constant maintenance, management, and support from Local HIs as well as technical support from the firm-wide Central HI. Third, IT-based KM tools, especially collaborative tools and social networking technologies such as Wikis, (and skill directories), are more useful for knowledge reuse and sharing than other technologies. These collaboration tools are recommended because they have some of the characteristics of direct knowledge exchange. Organizations should introduce and encourage their application, particularly for the new generation of knowledge workers.

A wide variety of IT-based KMSs and tools should be available and matched with the needs of the people; they should be constantly maintained and updated by HIs. However, the findings of this study show that the existence of many different systems is also problematic. Therefore, as far as possible, the KMSs should be integrated and the minimum number of platforms should be used. Advanced and effective, yet simple to use, search facilities should not be ignored. Nevertheless, as mentioned, there should not be just focus on IT; priority should be given to the people in the organization because knowledge reuse and sharing is largely a people issue rather than a technology issue. It is the people who share and use knowledge.

The findings of this research show that people are more likely to share their valuable knowledge directly with other people rather than attempting to do so via KMSs. Therefore, the setting and the climate to encourage direct contact between knowledge workers should be promoted. This study recommends assigning a dedicated Local HI in each group to facilitate this direct interaction or socialization. Local HIs should initiate and coordinate opportunities such as seminars, meetings, and social events. Furthermore, Local HIs can undertake many other knowledge-oriented roles to improve knowledge reuse and sharing. Local HIs can increase the value of knowledge in KMSs by quality control, adding metadata, and doing much other knowledge work on KMSs, as listed in this research.
One of the very important practical implications of this research is the development of relatively comprehensive, practical functions that HIs need to perform for successful knowledge reuse and sharing. Two types of roles are distinguished, namely technology-oriented roles which should be performed mostly by the KM department, and non IT-relevant or knowledge-oriented roles, which are mostly done best by the Local HI. Based on the case study, the knowledge-oriented roles are more important than the technology-oriented roles, and should therefore not be ignored.

Tacit knowledge and the way it is exchanged (shared and reused) requires careful attention. According to this study, tacit knowledge is often regarded as high-value knowledge and managers should put more value on meetings, group seminars and yellow pages as well as the role of the Local HI to facilitate its sharing and reuse.

The findings on intermediaries and high- and low-value knowledge flows also can have some implications for practitioners in a knowledge-intensive multi-unit law firm and probably similar organizations. First, for the most part, people tend not to contribute knowledge, especially high-value knowledge, to KMSs in the organization and therefore, in this regard, direct contacts opportunities for exchanging high value knowledge should be provided. Nevertheless, some high-value knowledge does go into KMSs and people get some high-value knowledge from them. So the contribution of knowledge needs to be encouraged, and also the Local HI needs to perform the relevant functions. These include quality control, updating, and adding metadata that can increase the value of knowledge in these systems. Second, low-value knowledge should not be regarded as useless knowledge; rather, it is usually essential knowledge for users, and KMSs are, therefore, vital for that type of knowledge. Thus, the flow of low-value knowledge should be facilitated by both Central and Local HIs, as well as IT.

Although all the technology-oriented functions identified in this study are important, a knowledge-intensive multi-unit organization should invest extensively and carefully in Local HIs, and mostly in knowledge-oriented HI roles such as promoting a knowledge reuse and sharing culture, and offering different types of incentives.

As mentioned above, both Central and Local HIs with both knowledge-oriented and technology-oriented roles are necessary. However, these intermediaries and roles should be coordinated by the Central HI. Moreover, the support of managers and their initiative in dedicating and supporting HIs for successful knowledge reuse and sharing are very important.

The current study also can be of interest of other types of organizations, such as small and non-knowledge-intensive ones. They can consider and probably apply most of the HI functions that have been developed here. They can also define a suitable HI structure for their knowledge reuse and sharing. It seems that, for these types of organizations, the role-oriented typology of the HI is more applicable, while Local
HIs may not be either a suitable or a possible option for them. Even so, they can realize the importance of tacit and high-value knowledge and the facilitating their reuse and sharing.

9.5. Limitations of the Research

This study, like all others, has limitations. The first limitation of the study is that the research and the two proposed frameworks are based on a single case study. The proposed theory and the frameworks of the study need to be studied and tested in other knowledge-intensive multi-unit organizations as well.

The second limitation relates to the sampling. Sampling is subject to sampling error, usually due to the problems and obstacles of accessing participants and attempting to make the sample representative (Kerlinger and Lee, 2000, Beaverman, 1996 in Liu, 2003). It was originally intended, in this research, to study more participants from both users (and sharers), and KM facilitators. It was planned to do more interviews with users (lawyers) and the expectation was to have a larger sample ranging from new lawyers to partners. However, access to a large sample with that much variety proved difficult and was eventually impossible. Due to the nature of their job, lawyers are perhaps among the most difficult people to access for research. During about 15 months of data collection, the researcher was able to interview only 23 people, and did not manage to interview any partners, although there were some senior and experienced lawyers among the participants. This was not so much a problem with the facilitators’ group, for example, the KM and IT department people. To combat this limitation, the interviews and the relevant documents and artifacts were analyzed deeply.

The third limitation relates to the difficulty of conducting research in a law firm, and is connected to the way that interviewees participated in this study. Most interviewees were selected because they volunteered and could make time available. Moreover, many of them were introduced by the firm, and particularly by the KM department, although they did fit into the research’s purposeful selection strategy (because I requested different types of participants). Hence, it is possible that a particular group became dominant although there is no evidence to indicate that this was the case.

There were also some limitations with respect to the intermediaries and high-value knowledge and the questionnaire. First, the quantitative data were not statistically representative because the sample was not selected randomly. Second, the KM team members in the interviews determined the perceived value of knowledge for users, which is a significant potential limitation, although there was no significant difference between the lawyers sample and the KM team sample in this respect. In fact, this turned out to be useful because it indicated the level of understanding of KM team members regarding the knowledge reuse and sharing of the users.

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It must also be acknowledged that putting a value on knowledge was rather problematic. So, the fifth limitation relates to the concept of high- and low-value knowledge, which may be different according to each participant's view. Furthermore, even differentiating high-value knowledge from low-value knowledge is not always easy. For example, few lawyers believed that all the knowledge is high-value knowledge; or some stated that knowledge can be high or low value depending on the situation and the context. Therefore, probably, differentiation of high-value knowledge from low-value knowledge is a matter of dispute. Both the definition and the concept of high or low-value knowledge are subjective, and generally it is difficult to assign a value to a piece of knowledge with unanimous agreement. Therefore, a participant may not have the same understanding of the concept when discussing or rating high- and low-value knowledge. Nevertheless, in an attempt to control this issue, at the beginning of each interview the interviewees were asked to distinguish between high- and low-value knowledge.

The sixth limitation returns to the existence of different types of KMSs and KM tools in the firm. Although, together all are regarded as KMSs or IT, they differ significantly from each other. For example, the Intranet is quite different from the Precedent or the Knowledge Database. Each system has different features, purposes, functions, and users. Moreover, people differ in their use of the systems and may assign different value to the knowledge in KMSs because of poor IT literacy or not being IT-savvy.

9.6. Recommendations for Future Research

Due to the complexity and multi-dimensionality of facilitation and intermediation of knowledge reuse and sharing, other dimensions and aspects of intermediaries may still be undiscovered. Some of these are discussed in this section as recommendations for future research.

The current study has concentrated on formal human intermediaries, in the sense that both types of HI that are investigated are somehow formally appointed, partly or fully, at unit level or at whole organization level to do KM work and facilitate knowledge reuse and sharing. However, there is doubtless another type of informal intermediary that can be very effective in successful organizational knowledge reuse and sharing. That type can be anybody in the organization, managers and knowledge users and holders. For example, while most of the time they may not be a direct source of knowledge for others they can still guide them to appropriate sources. As one of the participants said:

I will often get people just coming to my office and even my peers from another group, I tend to be the source of the information. If I don't know the actual answer or know the source I will be able to point people in the right direction.
So, future research could consider users as intermediaries and ways of improving or promoting this type of intermediary in organizations.

The current study has investigated knowledge intermediaries in a large knowledge-intensive multi-unit organization; first, the future research could consider testing these findings, probably in other cases using different research methodologies, such as quantitative methods. Second, it would be interesting for future research to investigate intermediaries in other contexts, for example, manufacturing and service companies (banks, insurance) or small or medium size organizations, determine the extent to which organizational type, structure, and size are important in intermediation and type of intermediary. Furthermore, in this study, two research frameworks are proposed, future research could examine them in other organizations. Because these models are the outcome of a single case study, they need to be tested and may need to be amended and extended.

This study has broadly identified the knowledge-oriented and technology-oriented functions of intermediaries. However, further scrutiny and clarification of most of these functions is necessary so future research could focus on the interesting and less investigated functions in the literature, to clarify them and establish their relationships with each other. Also, prioritizing them and determining the more important and critical functions for successful knowledge reuse and sharing would be interesting and useful further research.

This study has focused on the HI and its typologies and roles. Future research could concentrate on the technical intermediary and its taxonomies and possible roles in knowledge reuse and sharing. Although there are many studies in this regard, examination from the intermediary point of view in association with the HIs discussed in this thesis would be appropriate for future research.

Although this study has identified some characteristics of Local HIs, it has probably not elaborated on them enough. Future research might clarify exactly what type of people, with what kind of knowledge and skills, should play these intermediation roles, because not everybody can fit these roles satisfactorily.

This study found that the existence and facilitation of two types of HIs (Central and Local HIs) is the appropriate option for intermediation of knowledge reuse and sharing in a multi-unit law firm. However, due to affordability issues regarding the appointment of an expert as a Local HI, other alternatives, such as locating a KM team member in each unit may be considered, although this alternative may work better in non-knowledge-intensive multi-unit organizations.

As Markus (2001) has recommended, this research also recommends that IS research could and should investigate the degree to which HIs’ roles can be performed by
technology, and other possible areas IT in which can facilitate knowledge reuse and sharing, as well as areas in which IT should not take a role.

New types of IT tools and systems, such as social networking and collaborative tools and systems like wikis, have recently attracted increasing interest and could be more effective in knowledge reuse and sharing, in comparison with traditional KMSs or repositories. Research on these tools or systems could be interesting because they have more potential in facilitating knowledge reuse and sharing as they have some characteristics of instant and direct contacts as well as easy application.

In this study we found that while people tend not to contribute their high-value knowledge to KMSs, they still acquire some high-value knowledge from or through the systems. On the other hand, when information is processed it can be transformed into more valuable information or knowledge, and part of this process, such as sorting, indexing, and comparing can be achieve through IT. Therefore, future research can specifically focus on how IT can turn low-value knowledge into high-value knowledge in KMSs. Although we have pointed briefly to the way in which HI can increase the value of knowledge in KMSs, or turn low-value knowledge to high-value knowledge, future research needs to specifically investigate this role of the Local HI.

In a knowledge-intensive multi-unit organization, there are usually both KM departments and IT departments. This study found that the KM department or the Central HI are active in IT-relevant issues of organizational KM. So, one of the interesting areas of research would be investigating the relationship of these two departments with each other and with users, and their roles in facilitating knowledge reuse and sharing. It seems that the Central HI brokers between the IT department of the firm and the knowledge workers and practice groups. Future research might elaborate this intermediation.

Some may argue that the value an individual assigns to knowledge may not be relevant for the organization because an individual’s reasons are generally personal rather than corporate (Bogdanowicz and Bailey, 2002). Future research could investigate the role of intermediaries in high value knowledge flow from the organization’s perspective rather than from the perspective of individual perceived value of knowledge regarding individual work.

In this study, we did not focus on the four knowledge reuse situations of Markus (2001) and their link with intermediaries’ roles and types. However, it is an appropriate area for future research to investigate whether there is a need for different types of intermediary for different reuse situations or not and, if there is a need, to identify the appropriate intermediary types and roles for those situations.
9.7. Summary

This chapter has summarized briefly the research questions and their answers. It has listed the contributions of the research as well as the implications of the research for practice. Moreover, the limitations of the research were discussed and recommendations made for prospective researchers.

This thesis has investigated ways of improving knowledge reuse and sharing through intermediaries. It found that examining knowledge reuse and sharing (probably as well as KM) from the intermediary viewpoint, and investing in intermediaries, are useful for managing and exploiting organizational knowledge. This study has focused on HIs and indicated that, for a large multi-unit knowledge-intensive organization, two types of HI with two types of roles are required to achieve successful knowledge reuse and sharing. Moreover, to improve high value and tacit knowledge reuse and sharing, Local HIs should be considered and employed.

The combination of two important resources of organizations, namely, human resources and knowledge resources was the topic of this research. Smedlund (2008) regards HIs as social capital, and knowledge also is regarded as an important strategic resource, especially in a knowledge-intensive firm. This research builds a bridge between the social capital and the strategic resource, by proposing an intermediary approach to successful knowledge reuse and sharing.
References


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## Appendix A: Intermediaries Functions or roles in different areas and aggregation for knowledge intermediaries

Table one out of two – supplement to chapter 2

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<td>DSS I. (Lang and Whinston, 1999)</td>
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<td>Innovation I. (Howells, 2006 p.)</td>
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<td>Regional I. (Smedlund, 2006)</td>
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<td>General B. (Fernandez and Gould, 1994)</td>
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<td>Knowledge I. (Markus, 2001)</td>
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<td>Knowledge champions (Jones et al., 2003)</td>
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<td>Knowledge facilitator (Roth, 2003)</td>
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### Intermediaries Functions or roles

1. Recognizing organizational (users) knowledge needs
2. Identifying and satisfying the knowledge needs, wants, and expectations of organizational users and the organization in general
3. As representative belong to organization and communicate with outsiders (to understand the knowledge needs)
4. Interpret user's needs and translate into the problem that can be solved
5. Articulation: e.g. explicating a need for
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<td>2-Identifying, acquiring, gathering and screening knowledge from external and internal sources</td>
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<td>buy goods from sellers (collect knowledge from sources)</td>
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<td>facilitate the effective acquisition of new knowledge from outside sources</td>
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<td>as gatekeeper gather and screen necessary knowledge from outsiders and distribute them to organization</td>
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<td>as a local broker or coordinator facilitates (knowledge flow) from sources to users inside the group or organization</td>
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<td>3-Extracting all learning, generic themes of achievement and best practices, and authoring them if necessary</td>
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<td>5-Transferring all knowledge to appropriate KMSs</td>
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<td>6-Monitoring and controlling the input to the repository (providing input procedures and criteria)</td>
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<td>monitoring and controlling the input of the repository to be sure that appropriate knowledge enters</td>
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<td>7-Designing and implementing appropriate KMSs to present and publicize knowledge for next usage</td>
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<td>publication: e.g. making public to other actors</td>
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<td>creating directories for appropriate knowledge centres</td>
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<td>protecting of the results (storing gathered knowledge)</td>
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<td>brokering: these intermediaries help information customers and providers find each other, such as search engines</td>
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<td>8-Developing user-friendly KMSs in which members store their learning, and making the learning available for other members</td>
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<td>developing and operating a knowledge repository in which members store their learning, and making these learning available for other members</td>
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<td>accumulation: e.g. of a number of sources</td>
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<td>supporting seamless access to Web services via different terminal devices and physical connections</td>
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<td>9-Codifying knowledge to be ready for reuse and institutionalize it</td>
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<td>working with opinion leaders throughout the organization to codify and institutionalize new knowledge</td>
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<td>10-Adding metadata and context to knowledge</td>
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<td>buy goods and sell them after modifications</td>
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<td>sell transaction-related information only</td>
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<td>adaptation: e.g. changing properties of knowledge, like format, or language</td>
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<td>11-Indexing, classifying, abstracting sanitizing, filtering, structuring, and packaging of knowledge</td>
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<td>abstracting, indexing, authoring, sanitizing and so on</td>
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<td>filtering knowledge of repository for high quality</td>
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<td>organize information to their clients</td>
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<td>classifying: intermediaries that provide a classification of available information providers or products such as portals</td>
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<td>filtering: these services refine and summarized the view of existing providers or products</td>
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<td>combining: these intermediaries offer the combination of information products</td>
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<td>structuration: e.g. structuring of knowledge sources in certain categories</td>
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<td>12-Keeping the content of KMSs current and update</td>
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<td>13-Improving the searching and retrieving of knowledge from KMS</td>
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<td>navigation: e.g. browsing, searching, crawling;</td>
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<td>14-Establishing procedure and process for using the knowledge of KMS</td>
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<td>15-Providing qualification, and reliability of knowledge (by content rating or confirming the source of knowledge)</td>
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<td>authenticating: these intermediaries prove or confirm the identities of customers, providers, and products</td>
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<td>17-Developing knowledge map</td>
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<td>visualization: e.g. making visible which actor has knowledge on a certain subject</td>
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<td>18-Suggesting required positions for KM activists and coordinating their activities</td>
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<td>19-Administrating firm’s databases and facilitating knowledge flow</td>
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<td>facilitating knowledge flow in organizations by offering business research, call centre, and</td>
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<td>20-Disseminating knowledge to reuse by appropriate channels</td>
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<td>distribute information to their clients</td>
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<td>sell goods to buyers (distributor knowledge to users)</td>
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<td>21-Coaching and helping users to locate, analyze, process, and apply the knowledge and the KMS</td>
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<td>22-Suggesting ways to manage the type and the volume of knowledge</td>
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<td>suggest the way to manage the type and the volume of information within the organization -</td>
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<td>23-Serving and training the users to enhance the application of the KMS</td>
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<td>educating users about complexity of the various information sources and their deficiencies and</td>
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<td>serve the executives and managers to enhance the application of the CBI</td>
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<td>24-Lessan the mystique of the KMS technology</td>
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<td>lessening the mystique of the GDSS technology for users</td>
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<td>25-Reducing the time and effort users spend on knowledge acquisition and processing</td>
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<td>26-Encouraging knowledge sharing culture and effective use of organizational memory</td>
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<td>27-Facilitating knowledge sharing by creating communications tools</td>
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<td>brokering a (knowledge) transaction between two or more parties</td>
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Intermediaries Functions or roles

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<td>brokering: these intermediaries help information customers and providers find each other, such as search engines</td>
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<td>bridging: e.g. of time and distance between supplier and demander</td>
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<td>mediate exchanges between two other actors who are not directly linked</td>
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<td>28-Facilitating knowledge sharing by creating and supporting dynamic knowledge networks</td>
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<td>facilitating knowledge flow in organizations by coordination of knowledge networks, offering business research, call centre</td>
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<td>as a liaison outside of two groups or organizations facilitate between two different groups or organizations</td>
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<td>Intermediaries Functions or roles</td>
<td>as caretaker, maintaining the integrity of the networks</td>
<td>as mediator, these intermediaries assist customers and providers to conduct a business</td>
<td>assists the group with its group decision-making process</td>
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<td>(Note: all the roles in this Table were in Table one except the role 29)</td>
<td>Adverting intermediary - Millar and Choi (2003)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>Group intermediary - Burt (1999)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
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<td>IT intermediary - Schultze and Orlikowski (2004)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>HI of network- Snow et al. (1992)</td>
<td>6-Monitoring and controlling the input to the repository (providing input procedures and criteria)</td>
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<td>WWW intermediary Vishik and Whinston (1999)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>HI- Terrett (1998)</td>
<td>7-Adding metadata and context to knowledge and to knowledge value</td>
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<td>Librarians- Du Plessis &amp; du Toit (2006)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>Info providers- Fennessy and Burstein (2007)</td>
<td>7-Adding metadata and context to knowledge and to knowledge value</td>
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<td>HR- (Swart and Kinnie, 2003, Zupan and Kase, 2007)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>Senior-level professionals (Weiss, 1999)</td>
<td>7-Adding metadata and context to knowledge and to knowledge value</td>
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<td>Information Professionals - Pawlowski and Robey (2004).</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>HI and IT - Datta (2007)</td>
<td>7-Adding metadata and context to knowledge and to knowledge value</td>
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<td>HI- Fischer’s (2002)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>Internal knowledge Broker-Cillo (2005)</td>
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<td>ONA- (Cross et al., 2002) &amp; (Anklam et al., 2005)</td>
<td>1-Identifying, acquiring and screening knowledge from external and internal sources</td>
<td>Knowledge broker Aalbers et al. (2004)</td>
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<td>Knowledge broker Maier and Remus, (2002)</td>
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<td>Librarians .HI- Davenport and Prusak (1998)</td>
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<td>- give additional meaning mostly to tacit knowledge</td>
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<td>- &quot;translates&quot; the intentions of the producer into messages that will be understood</td>
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<td>11-Indexing, classifying, abstracting sanitizing, filtering, structuring, and packaging of knowledge</td>
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<td>- filtering: filtering the knowledge to be more useful for users</td>
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<td>13-Improving the searching and retrieving of knowledge from KMS</td>
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<td>15-Providing qualification, and reliability of knowledge (by content rating or confirming the source of knowledge)</td>
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<td>- facilitate a recipient’s measurement of the intangible value of knowledge received; and help to bridge the gap between consumers and producers in measurement of intangible value</td>
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<td>16-Maintaining the repositories sustainable and active</td>
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<td>18-Suggesting required positions and policies for KM activists and coordinating their activities</td>
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<td>- HR policies and processes in overcoming the barriers of knowledge sharing and building social capital or networks</td>
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<td>19-Administrating firm’s databases and facilitating knowledge flow and control access to knowledge</td>
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<td>- Gatekeeping: controlling access to the</td>
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<td>- searching relevant information for practitioners to support decision making</td>
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<td>21-Coaching and helping users to locate, analyze, process, and apply the knowledge and the KMS technology</td>
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<td>- helps participants to locate the knowledge or experts needed, and helps to navigate the organizational knowledge base”</td>
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<td>23-Serving and training the users to enhance the application of the KMS</td>
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<td>25-Reducing the time and effort users spend on knowledge acquisition and processing</td>
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<td>26-Encouraging knowledge sharing culture and effective use of organizational memory</td>
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<td>- Promoting trusted relationships with primary information vendors and customers.</td>
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<td>- Surfing and challenging assumptions; Relinquishing ownership of knowledge</td>
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<td>28-Facilitating knowledge sharing and collaboration by creating and supporting dynamic knowledge networks</td>
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<td>- the network architect who designs and builds the network, second, the lead operator who organize and manage the members, and finally, the caretaker, who maintains the integrity of the networks</td>
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<td>29- explore and observe the firm be the source of who knows what and connect knowledge seekers to knowledge holders</td>
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<td>- explore and observe what people do and who knows what, and get big picture</td>
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<td>- knowledge brokers (gatekeeper or boundary spanners) connect buyers to sellers</td>
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<td>- diagnosing the relationships among individuals and groups inside firms and across organizational boundaries</td>
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<td>- help transfer complex knowledge between different parties that are not directly connected</td>
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<td>- mediate exchanges between two other actors who are not directly linked</td>
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<td>- connect individuals together who would otherwise be disconnected in a network</td>
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<td>- Crossing boundaries (gaining permission to)</td>
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Appendix B: Information Sheet and Consent Form - supplement to chapter 3

Information Sheet and Consent Form for Participants

Researcher: Behboudi, Mohammad Reza (PhD candidate)
Study Topic: The role of knowledge intermediaries in knowledge sharing and reuse: improving usage of organizational high-value knowledge

2.1.1 Study description
The nature of competition in many industries has moved toward knowledge-based resources, and a firm's competitive position is extremely dependent on its ability to better manage the existing knowledge to generate and arrange new knowledge solutions. One important way of leveraging existing knowledge is through the share and reuse of firm-specific knowledge among different individuals or groups within an organization. Human and technological intermediaries are among the factors important for successful knowledge sharing and reuse.

This PhD research studies high- and low-value knowledge sharing and receiving processes, organizational knowledge management systems (KMSs), and human and technical intermediaries. The research aims to clarify the concept of knowledge intermediaries, and determine which roles or functions different intermediaries can and should perform to improve high-value knowledge sharing and the effectiveness of KMSs.

2.1.2 Data Protection Confidentiality
My intention is to record interviews whenever possible. However, your interview will not be recorded unless you give permission. Whether or not your interview is recorded, the data provided by you will be stored in electronic and/or hard copy storage media in a secure facility to which only I, the researcher, have access. Information provided by you will be maintained in strictest confidence to the maximum possible extent. Neither your name nor any other potentially identifying details will be quoted in research reports and neither will any tape-recording or transcript of the interview contain any identifying information. Any documents linking you to the interview itself will be treated confidentially and will not be stored with either a tape-recording or transcript. Research data and publications will be treated according to the “CONFIDENTIALITY DEED POLL”, between the firm and researcher, in accordance with which the identity of the organization will also remain suppressed.
2.1.3 Consent
Your Participation in this study is entirely voluntary. You may withdraw from the study at any time without providing reasons or comments. Prior to your interview you will be asked to complete and sign this consent form and you may retain a copy for your personal records if you wish.

I would like to record your interview in order to increase the accuracy of the data that is collected. However, recording will only be used if you are comfortable with this approach and give your written permission on this form beforehand.

2.1.4 Declaration
I have read this Information Sheet and Consent Form for this research project. I understand that my participation in the study is entirely voluntary and that I may withdraw from it at any time. I also understand that my comments will be treated in a confidential manner and that my identity will not be revealed in any project reports. I confirm that I am over eighteen years of age.

Name: ____________________________________________________________

Signature: __________________________ Date: ____________________________

I agree / do not agree to my interview being recorded.

Signature: __________________________ Date: ____________________________

2.1.5 Contacts
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ANU Research Office: Ms Yolanda Shave, Human Ethics Officer, Research Office,
Bldg. 10B Chancelry,
Australian National University, Canberra ACT 0200
Tel: 02 6125 7945,
Fax: 02 6125 4807
Email: Yolanda.shave@anu.edu.au
If you have any questions or concerns regarding this interview you may contact either the above mentioned contacts at ANU or Ms [X] at [the firm], Tel [X]
Appendix C: Interview questions and its introduction-supplement to chapter 3

Topic: The role of human and technical intermediaries in knowledge sharing and reuse

Introduction

As mentioned in the Information Sheet and Consent Form, the purpose of this study is to understand the role of different intermediaries in knowledge sharing and reuse in an organization and how they facilitate more and better knowledge sharing. “Knowledge” here refers to the knowledge of “anything that is required to get the job done”, that you share with your colleagues inside the organization or receive from them to accomplish your tasks. High- and low-value knowledge is differentiating according to your evaluation or perception of its value, usefulness, benefit, and so on.

The objective of the interview is to obtain your understanding of the issues involved. Thus, there is no right or wrong answers. As explained in the Information Sheet and Consent Form, your responses will be kept strictly confidential and your identity will not be known to anyone other than the researcher. The information we gather will be used for research purposes only. We are using an interview approach. To help to conduct better research and to ensure that we accurately capture your responses, we would like to audio-tape the session if you kindly give permission.

Thanks and Best regards
Mohammad Reza Behboudi

Abbreviation & explanation:

Knowledge: refers to specific distillation of knowledge, both tacit and explicit, required to resolve an applied problem in context – for which you (the lawyers or the firm) receive fee for service from a client.

HVK: high-value knowledge
LVK: low-value knowledge

KMS: knowledge management system (IT-based system for facilitating knowledge reuse and sharing such as Knowledge Database and Intranet)

The interview questions are designed in four parts:

Part A: we try to understand the high- and low-value knowledge and talk about some examples.

Part B: we put you in two situations, knowledge finding/receiving, and sharing in terms of HVK

Part C: knowledge finding/receiving, and sharing in terms of LVK

Part D: we will talk about the knowledge receiving and sharing problems and ways to improve them; also we will try to know the roles of human (such as KM team), and technology (IT systems & tools) intermediaries in improving knowledge sharing and reuse.
Part A: introduction

- What is your role in the firm, and how long have you been in this role?

I) differentiating high-value knowledge (HVK) from low-value knowledge (LVK)

Knowledge will vary in its usefulness or benefit from higher to lower value.

1- from your point of view:
   a. What is HVK? What are its characteristics? Would you please give some examples in your work?
   b. What is LVK? What are its characteristics? Would you please give some examples in your work?

Part B: High-value knowledge flow (HVK)

II) As knowledge receiver

If you have time and opportunity, how much do you find / receive high-value knowledge from the following sources? (we will talk about how you find and why after each sources)

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<tr>
<th>Sources</th>
<th>Not at all</th>
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Currently, from where do you get the most HVK? No: From which source do you get the least HVK? No:

1- Does any person (or team), information technology (IT, KMSs) or other medium play a role in the process of finding and receiving your HVK. Please explain, and give examples if possible.

III) As knowledge holder (HVK)

If you have time and opportunity, how much do you like to share or contribute your own high-value knowledge with/to the following targets? (we will talk about how you share and why after each target)

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<th>Targets</th>
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</table>
5. Directly with your colleagues in this branch
6. Directly with your colleagues in other branches
7. Share through KM people to KMSs
8. Other …

Currently, with which target(s) do you share most of your own HVK? No:

With which target(s) do you share less of your own HVK? No:

1- Do you prefer to contribute your own HVK to IT-based systems such as knowledge databases or share directly with people? Why?

2- Does any person (or team), information technology (IT, KMSs) or other medium play a role in your sharing of HVK with others? Please explain, and give examples if possible.

IV) As knowledge receiver

If you have time and opportunity, how much do you find / receive **Low-value knowledge** from the following sources? (we will talk about **how** you find and **why** after each sources)

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Currently from which source(s) do you find/ receive more often LVK? No:

1- Does any person (or team), information technology (IT, KMSs) or other medium play a role in the process of finding and receiving your LVK? Please explain, and give examples if possible. (if the answer to this question is same as HVK that we talked before just let me know and pass)

V) As knowledge holder

If you have time and opportunity, how much do you like to share or contribute your own **Low-value knowledge** with/to the following targets? (we will talk about **how** you share and **why** after each target)

<table>
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4. Your superiors (partners)
5. Directly with your colleagues in this branch
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7. Share through KM people to KMSs
8. Other ....

Currently, With which target(s) do you share more LVK? No:

1- Does any person (or team), information technology (IT, KMSs) or other medium play a role in your sharing of LVK with others? Please explain, and give examples if possible. *(if the answer to this question is same as HVK that we talked before just let me know and pass)*

**Part D: practical issues**

**VI) Knowledge sharing improvement by means of intermediaries**

1- What are some problems with finding and receiving knowledge that you need?
2- What are some problems with knowledge contribution to IT-based databases such as knowledge database?
3- What are some problems with knowledge sharing generally? (why people not share)
4- Can the process of knowledge sharing and reuse be improved or better facilitate? How?
   a. Could any person or a team of people improve or facilitate knowledge sharing and reuse? Who and How?
   b. what should be KM team’s roles to improve or facilitate knowledge sharing and reuse
   c. What is your idea about KM lawyers inside the divisions in terms of facilitation of knowledge sharing and reuse?
   d. Could better technology systems improve or facilitate knowledge sharing and reuse? How?

**VII) You as an intermediary**

1- Are there any situations where you facilitate the flow of knowledge from a knowledge holder to other users in the workplace? Please explain how.
2- Does the role you play in facilitating knowledge differ according to whether the knowledge is high or low value?
Appendices D: Further evidences from data about the location-oriented typology of HIs including 15 Appendices (from D.1 to D15) - supplement to chapter 5

**Appendix D.1: The existence of the Local HI in the firm**

*I am unusual person in this office I don't do client work and I don't time cost, my role is as a KM lawyer. I report to the particular partner in the within my division.*

*They [KM lawyers] are not very many, there is one in the X group who is a KM lawyer works part time there is one in Y group who works full time. ...They both working nationally, Z group used to have somebody but I don't think they do any more, ..., and there is a lawyer in office X who tends put kind of timing to precedent but it is not really her role doing, because she has a personal interest in it, and there is practice manager in office Y who has that as a part of her role, there is not a huge group.*

*I am member of the X team and part of my role is to manage the KM component of the team. My role is national for the X division; the X division has a team in [different cities]. except than me in this group in office Y for example, there be a lawyer whose responsibility is to make sure that they collect KM information and distributed within the team and work with that person, [similar to my role] in most case, they would generally be a full time lawyer and over and above the legal practice they do some KM whereas my role is other way around I am not a full time lawyer my legal practice is around 20%. ... so, KM lawyer in this division officially is only me but you find unofficially within the various offices they would be people who will take the responsibility.*

*[knowledge sharing and reuse could improve] if we had know-how person in a division basically constantly on the look out to improve contribution processes and improve knowledge sharing, I think that would make a big difference of, ...yes having a know-how person in the divisions, [at the moment] some teams do have but not all. ...they belong to the divisions ...and sometimes they are lawyer not all the time but a lot of the time they are.*

*I am in the real state practice group, I am only the person who works in KM in this group, there is not really KM team any more, there used to be one stage but a kind of dissolved, there are couple of people on a floor separate to me who I work with who are more the clerical side I supposed, but other than that there is no team as such.*

**KM lawyers regard himself as intermediary:**

... a part of my role certainly is [knowledge] intermediary.

*[I am doing KM activity in one day that I come to the firm] (Researcher: Do you see yourself in this position as intermediary or facilitator of knowledge sharing and reuse?) Sure, yes, that's probably is very good concise description what I do I guess

(Researcher: Who facilitates getting high-value knowledge for lawyers?) Well, obviously they themselves play primary roles in terms of thinking about what they want how to get it, you know their colleagues, their subordinates, their premieres, know-how staff, me I support if they think to use me in that way, although prominently they don't.*

**Existence of KM coordinator or KM committee:**

*I started at in the firm as a law clerk but still studying, a lot of my role involved*
collecting know-how and certainly I am still on the KM committee. 90 per cent of my work is client work, [and] less than 10 percent is KM work.

Appendix D.2: Qualification or expertise of Central HI (or KM team)

I have double major in computing and librarianship archive and records. ....half the team does [have special legal knowledge] but half the team doesn't. There are some lawyers in KM team, and also the legal specialist librarians know even though they are not lawyers ... (KM team member).

I have degree in multimedia and professional writing (KM team member).

Appendix D.3: Special role that can be done by Central HI

provide technical support as well as library services

(Researcher: From the two group of KM in the firm, KM lawyers and KM team, which one is more effective in facilitating knowledge sharing and reuse?) well both really, ... you do need the KM people who are keeping the systems maintained and doing all that technical sort of improvement and all the library work, you know you really need all that but on their own they cannot really provide what the groups want because the groups never see them or talk to them, people like me we are the visible ones and people come to me about all the issues and then I apply the sort of a gateway I suppose if it is not something that falls in my areas then I refer them to the appropriate person in KM group they can help them or to IT someway I think fulfill a kind of conjoined role and helping the two side to talk to each other because they don't think share much language together, but you need both you cannot, but integrated it means just one group or things but with various aspect to it, my kind of aspect toward and would have the KM aspect toward as well. I mean together work quite well you do need both.

Transfer KM best practice to groups

they [KM team] have got the role of trying to encourage good practices in those groups ... he [KM manager] is across what is happening in other divisions of the firm so I'm trying to pick his brain about what we are going to do.

Reliance of users on KM team

I think lawyers rely on the KM team in general quite a lot, (Researcher: so they have more contact with KM team day to day?) yes that is right.

Library and help desk services

if we have got a query or something we don't know, we have got an online telephone line so we can ring up the library, or email them ... and somebody works quickly, so if I don't know how to use the Intranet or KDB, or even if we have a research question, and we don't know the answer, the central number will ring you back and one of the librarians will help you.

Library, research and buying commercial database

librarians for example, as a KM people, ... I imagine that they are very good at it ..., KM people who are responsible for helping to identify purchase the commercial databases or whatever have to be.

Technology and KM method implementing

I guess for both technology and methodologies which they [KM team] have to sort of
implement more broadly across the firm.

**Appendix D.4: Insufficiency of Central HI: Responsibility of KMSs**

**KM team nothing to do with KDB or KM**
they don't have really much of the role [in KDB], the only things that I ever go to them would be if I want to expand for instance the list of keywords, I have to give any additional keywords that I want to added to them because only they have access to do that kind of things, but other than that I really have nothing to do with KM people in respect of KDB.

**Responsibility of KMSs with divisions**
(Researcher: You said that every division is responsible for the KDB and DI?) yes.
(Researcher: So what does KM team do in relevant to this databases?) we [KM team] provide consultancy to them.

it [wiki] is basically managed within the divisions by a partner.

**Not responsible for updating or knowledge work in KMSs (passive intermediary)**
[in terms of updating contents of KMSs] no, we are responsible in terms of we need to be told when something need to be updated we don't go through and check the content, and [same as with categorization] we help with the categorization.

**KM team more support technically**
it [our, KM team contribution] is mostly technical, it is technical and process driven the advice that we give.

**Appendix D.5: Insufficiency of Central HI: General approach,**

that is something very difficult for a KM team to be on top of, unless, often I think with lawyers they need pushing to put things into KDB or keep the KDB up-to-date, they need to be pushed and need someone jumping on them say hey [laughing] we want that advice to go there ... that is something very difficult to do at national level by KM team.

**Appendix D.6: Insufficiency of Central HI: Less impact in the groups**

**Less impact**
my view I think they [KM team] have very little impact they can facilitate but I think it is going to be of very low impact.

**Perception of lawyers about KM people: bureaucratic and clerical role, not effective**
you know there is a perception in law firm lawyers have a perception that all of support staff and that including KM people, ... are I suppose they have a sense of unreality about what is all about, is this a kind of view of it as being, you know, I ring them up they got home by 5 clock or what uses that to me blablabla.... you know that kind of perceptions, where as people who work in support group do think to see that, they cannot seem to see that they fulfilling far more bureaucratic and clerical role which, you know they have to make more visible.

my honest impression is the lawyers in this group at least probably wouldn't find them that useful.

(Researcher: So you [KM team] become go between and facilitate knowledge from
Appendix D.7: Insufficiency of Central HI: Distance from knowledge workers,

Less contact with KM team, Use the KM team for troubleshooting,
I [a lawyer] haven't used them for that [to find who knows what], I don't know whether they do, I use them more for if having difficulty getting holder information, that cannot find anything on DI or KDB or cannot get hold of the pieces of legislations or something like that, normally when I have a troubleshooting or trouble. ... look I hardly ever speak to them and I think the occasion that I have is not to do research it is more, the last time I remember using them was looking a legislation and ... I have to ask them to find hard copy versions of things.

Not knowing about them in groups, less useful
(Researcher: How important is this group for lawyers to get knowledge?) Look, I do not know, I mean if you can librarians for example, as a KM people, well first of all I do not really know what the library staff here do I do not know what services they provide I don't know whether you can go and say I am doing the research for such and such to get back for me in two days time or whatever, I imagine you can and I imagine that they are very good at it but I have never done that myself and I don't just know whether anybody else in group does it, in terms of the other type KM people you know people who are responsible for helping to identify purchase the commercial databases or whatever have to be, then my honest impression is the lawyers in this group at least probably wouldn't find them that useful I mean they occasionally come along and make presentation to the practice group about, what is going to say, you know about new databases for example, you know they just cannot present them in a way that explain any things to anybody or make some useful, appeared useful to you that is all sort of explain in a very, you know, oh this is a ... new technology rather than in a way that make sense to lawyers and I think this is a bit of divide there.

Lawyers not use KM team often
I speak them [KM team]everyday in lunch [laughing] I use them once in a last two years actually seek knowledge from as oppose to give knowledge to.

Appendix D.8: Insufficiency of Central HI: reactive or passive facilitator
as facilitators [of knowledge sharing], we [KM team] don't have a role, well we are here if they need us but we don't, we are not actively out there encouraging it, so ... in terms of being available we are here available to them if they need it.

I have to say and this obviously controversial of course I have to say that at the moment I find it [KM team relationship with lawyers in terms of supporting and facilitate knowledge reuse and sharing] extremity passive I think it could be far more active.... it is quite passive I think there are many attempts to be more active but for whatever reason there is suggestion and always taken up by the division, so it is very hard to get in there to be actually be able to push forward an idea through division, it have to come from the divisions itself is something that is going to work.

I don't think our KM team is set up that way, it is very itsibitsi, a lot of it dependent on who particular division want to deal with the KM and how they want to contribute
Appendix D.9: The importance and effectiveness of the Local HI

[ KM] pinched to be inside a group definitely... I think that is a great idea, because it means that you have the secretary who will do day to day administrative tasks but then you have a [KM] person who has a specialized understanding of this particular area of law and will be able to facilitate us receiving the kind of information that is affecting our practice group so one of the weaknesses I think in the [KM] team here in [office X] is that they service the entire firm but the entire firm split up into the different area of law ...., so it is fairly general approach but if you had someone in this practice group like ..., then that would be perfect, they be able to encourage you to upload and to share and all of that but that also develop a specialized understanding of people in the group how to get through that partner to do that, and yes, it would be both and understanding of the law in that group and the needs of that group but also of the personalities involved and the needs of that.

(Researcher: Who should do these kinds of things, work on the databases and make them current or organize or categorize or sort them?) I think it need to be someone who is dedicated to the role of know-how, so not just a lawyer who have spare hour [laughing]it needs to be someone who does that full time and dedicated to that role but ideally it should also be someone who is part of the team but they are allocated to specific area of law (lawyer).

it [the process of knowledge sharing and reuse] could be improved by again having that someone from KM dedicated to your group and actually being aware of what people working....

[knowledge sharing and reuse could improve] if we had [KM] person in a division basically constantly on the look out to improve contribution processes and improve knowledge sharing I think that would make a big difference of, ...yes having a [KM] person in the divisions, [at the moment] some teams do have but not all. ...they belong to the divisions ...and sometimes they are lawyer not all the time but a lot of the time they are.

I think both they have got their role my guess is that they would find in-house lawyers more useful than the general sort of firm-wide service but I could be wrong.

(Researcher: From two group of KM in the firm, KM lawyers and KM team, which one is more effective in facilitating knowledge sharing and reuse?) I think from daily basis probably the people who are internal to the team connected to the team, that is not to say that the KM group does not play an important role overall because I think the advantage of KM team they get a firm-wide perspective on issues and which someone in the group such as me I don't get to, see the firm-wide perspective.

(Researcher: from the two group of KM in the firm, KM lawyers and KM team, which one is more effective in facilitating knowledge sharing and reuse?) well both really, I think you should integrate them a bit more than we have, it should not be two group, it should be really one group with separate role perhaps, you do need the KM people who are keeping the systems maintained and doing all that technical sort of improvement and all the library work, you know you really need all that but on their own they cannot really provide what the groups want because the groups never see them or talk to them, people like me we are the visible ones and people come to me
about all the issues and then I apply the sort of a gateway. I suppose if it is not something that falls in my areas then I refer them to the appropriate person in KM group; they can help them or to IT somehow. I think fulfill a kind of Conjoined role and helping the two side to talk to each other because they don't think share much language together, but you need both. You cannot, but integrated it means just one group or things but with various aspect to it, my kind of aspect toward and would have the KM aspect toward as well. I mean together work quite well you do need both.

Appendix D.10: The quotes regarding the roles presented in Table 5.1, Specific roles that can be done best by Local HI

(Researcher: Who should do these kinds of things, work on the databases and make them current or organize or categorize or sort them?) I think it needs to be someone who is dedicated to the role of know-how (a lawyer).

it [the process of knowledge sharing and reuse] could be improved by again having that someone form KM dedicated to your group and actually being aware of what people working on and pushing them to contribute the knowledge to some sort of central databases and keeping up-to-date and categorizing it, ... to have more detail information on like have really detailed notes with precedents particularly... (adding metadata).

but if you had someone in this practice group like ..., then that would be perfect, they be able to encourage you to upload and to share and all of that but that also develop a specialized understanding of people in the group how to get through that partner to do that, and yea, it would be both and understanding of the law in that group and the needs of that group but also of the personalities involved and the needs of that.

if we had know-how person in a division basically constantly on the look out to improve contribution processes and improve knowledge sharing I think that would make a big difference of.

[KM lawyers inside of practice groups can improve knowledge sharing and reuse, because] I think that they have probably a closer awareness of the kind of work that they have being done so they are in very good opportunity to be able to pinpoint when the information flow we can put out that knowledge it is going to be best use for reuse.

[KM lawyers inside of practice groups can improve knowledge sharing and reuse, because] I think by demonstrating good examples demonstrating time when it is been helpful and achieved the better result, and also probably by developing more collaborative relationships with the KM division.

so that they [KM person in groups] were actually aware of what was going on within that practice group and what able to use that as a base for organizing the materials and taking materials up-to-date, I think sometimes a lot of time we are for I guess for non-billable work and so it need to be efficient as possible and as useable and as possible.

(Researcher: From two group of KM in the firm, KM lawyers and KM team, which one is more effective in facilitating knowledge sharing and reuse?) I think from daily bases probably the people who are internal to the team connected to the team.

(Researcher: Who should do these kinds of things, work on the databases and make
them current or organize or categorize or sort them?) I think it needs to be someone who is dedicated to the role of know-how, so not just a lawyer who have spare hour [laughing] it needs to be someone who does that full time and dedicated to that role but ideally it should also be someone who is part of the team but they are allocated to specific area of law (a lawyer).

... so it [my role as KM lawyer] is around the construction and composition of this team, it is around the content and directions of meeting that they held on a regular bases, the construction of agenda and a lot of this being around the process by which they can be made to work better because there was already certain systems in place.

my partner, ... actively encourages you to, if there is piece of advice because he sign, because firm has strict sign off things, so significant letters for advice always must be signed by partner, generally he would say put this into database or don’t do that because of secretive or too confidential don’t want people know about it.

Search function is supposed to do [filtering and categorization] but unfortunately searching is not the best could be improved, that is an IT issue and oppose to know-how, (Researcher: But you should initiate or ask them?) yes.

I have stress again we have monthly or two monthly videoconferences between the lawyers in various offices about knowledge and I keep saying to them, please you need the senior lawyers to review what is going on because it is time consuming and can be time cost and so on....

... and there just finding dedicated people with significant amount of time to get on top and do the data entry and think about what document should go in there, that takes a lot.

Roles of KM coordinator or KM committee as Local HI:
what we [know-how committee] do is the essentially facilitate contribution to the KDB. (KM coordinator)

[facilitate the flow of knowledge] through contributions to our KM database, and also giving presentation as I mentioned before about the continued learning education seminars that we hold (lawyer, KM coordinator)

Occasionally an email will go around with that someone in the firm who is responsible for the KDB for this quarter, [the email come from X who] is a lawyer a senior associate, (Researcher: so part of his role is know-how?) No it isn't but he has been delegated that role for a specified period of time.

as a coordinator I [KM coordinator] set up the schedule for our junior lawyers to make intranet contributions on a weekly basis to collect the information that used or created within the group on a weekly basis and to put it up on in the KDB.

[regarding] DI the way that they governed is that each division has a coordinator that coordinator trained on how to update the content in the intranet and when something use to be updated let say there is a particular new story that need to be put up on the intranet that coordinator can go in and do it themselves and it is quite technical but it is not hard to train someone on how to do it, I think that would the KDB although a similar kind of set up exist the technology is real put off ... it is very old technology it is like an old library software that people use to use which is real turn off for new people trying to learn how to use it, so I think that is the disincentive for contribution.
Appendix D.11: Both types of HI are necessary and useful

They [KM lawyers] don't necessarily have a grasp on the systems, they more look at the theory around how to share and what and when to share and then we provide technical solution.

(Researcher: Do you think a kind of problem that there is a parallel works, two teams doing the same things?) No I don't think so because we [KM team] tend to work quite closely with the people when they need us, although we do not stick to them on everyday level when they do require help from KM, then they call us and they know who to go to for the answer.

I think both they have got their role, my guess is that they would find in-house lawyers more useful than the general sort of firm-wide service but I could be wrong.

(Researcher: From the two group of KM in the firm, KM lawyers and KM team, which one is more effective in facilitating knowledge sharing and reuse?) I think from daily bases probably the people who are internal to the team connected to the team, that is not to say that the KM group does not play an important role overall because I think the advantage of KM team they get a firm-wide perspective on issues and which someone in the group such as me I don't get to, see the firm-wide perspective.

(Researcher: From the two group of KM in the firm, KM lawyers and KM team, which one is more effective in facilitating knowledge sharing and reuse?) well both really. I think you should integrate them a bit more than we have, it should not be two group, it should be really one group with separate role perhaps, you do need the KM people who are keeping the systems maintained and doing all that technical sort of improvement and all the library work, you know you really need all that but on their own they cannot really provide what the groups want because the groups never see them or talk to them, people like me we are the visible ones and people come to me about all the issues and then I apply the sort of a gateway I suppose if it is not something that falls in my areas then I refer them to the appropriate person in KM group they can help them or to IT someway I think fulfill a kind of Conjoined role and helping the two side to talk to each other because they don't think share much language together, but you need both you cannot, but integrated it means just one group or things but with various aspect to it, my kind of aspect toward and would have the KM aspect toward as well. I mean together work quite well you do need both.

(Researcher: You mean that both are necessary maybe more collaboration need?) yes that is right.

Appendix D.12: KM coordinator or part time KM lawyer dedicated in groups

actually my colleague would probably [deal with the know-how things in our group] who is a lawyer she is just sort of being delegated the responsibility of dealing with intranet so I probably go to her to help me upload anything to.

I am the coordinator [of KMSs], it [my role] is just forming the intranet and KDB within our group, it is about 5% of my role which I formally assigned to do that.

....me and my partner are doing KM things in this group. [as full time KM lawyer] no we don't have that luxury [laughing]. [to improve knowledge sharing and reuse]
Everybody can do it but again you have got to give either in my role in my spare time, I mean there is little incentive there to do it [laughing].

Yes I am a lawyer ...my role is probably around 20% client work and 80% management, ...including KM, HR and general administration. ...I am describe as a manager [not KM lawyer], ... well in a sense that part of my role encompasses what they [KM lawyer] do, it is not my full time job I do more than just know-how.

The KM coordinator in each division and they are actually either volunteer or they are recommended by someone and it can be anyone it can be a lawyer it can be a secretary it can be a work coordinator it just depend on whoever has capacity to help. They belong to the divisions, the KM team has a support group which we support the coordinator with technical assistants.

Appendix: D.13: Having just Central HI but with dedicated members to each unit:
my idea of KM team which is not the way we have it would be to have a person appointed, a team of comprise of at least one person for every divisions within the firm who had a knowledge of the law that was practicing in that division and have a good personal relationship with lawyers in that divisions so that.

Appendix D.14: Role of partners in encouragement
one of the concerns is Lawyers’ tendency to hold the information ... just getting them actually share that, probably changing culture... [or using force] need to be a directive from partner say this has to happen ...

any encouragement from partners rather than say the message coming from Librarian,
Partner should ask layers to contribute

Appendix D.15: Relationship of two types of HI:
I [KM lawyer] only really talk to those people [KM team] who are involved in actually putting document for me on the system and that kind of things. There are monthly teleconferences which I try to attend, and where it is national things where we discuss for the project that happening now nationally and cross over the divisions and that is interesting information for me to here otherwise I don’t really know what is happening on other divisions very much, and other than that the only contact that I have with them is, there are two women who work there X and Y and I work quite closely with those two, X does the coding what easy coding which a document automation and work with here on that for [our group] purposes and I work a lot with Y because she actually is the person who does technical side of precedent production on maintenance.

(Researcher: But at the moment they [Local HI] do not have any relationship with you?) They do but not a formal relationship. (Researcher: So more collaboration and coordination with those groups are necessary?) Yes.

I am not sure [that our-KM team role is quite similar to KM lawyers’ roles] because we work very separately and I don’t see a lot of output from them [KM lawyers] I am sure that the groups do.
well I consult with them and speak to them I am involve in their monthly meetings and I use them as a resource from the KM perspective, ... so finding some research done or if I need some access to some KM material they will get it for me I will ask them for it.

it vary depending on the practice group, so we have a liaison person that work with them and another one we just simply, they manager either division we they use supported by KM as with anyone else.

but other than that I [KM lawyer] really have nothing to do with KM people in respect of KDB. .....I [KM lawyer] only deal with [KM team]as I said basically two of them occasionally you know I speak to X because he is in this video conference that we do, but I don’t even know other KM staff in branch X or Y or Z.

they [the KM coordinators] are not KM they are people who trained to use tools. they [KM lawyers] probably rely on the resources of the research people quite a bit.
Appendices E: Further evidences from data about the role-oriented typology of HIs including 60 Appendices (from E.1 to E.60) - supplement to chapter 6

<table>
<thead>
<tr>
<th>Appendix E.1: Knowledge sharing is not valued in organization</th>
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<tr>
<td>[People share] very little, sharing knowledge is not considered high value it is not something that is major driver in the organization, ....[generally there is sharing more in] the higher, my experience that appear that the higher level but not lower down, among partners and associate and so on.</td>
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<td>The reality is we are under pretty tight budget constraints timelines to achieve certain goals; knowledge is not valued in my opinion as highly as what it should be.</td>
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<td>it is more bit not because they are being selfish, just might not cross their mind.</td>
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<td>it is not a priority either I think so is not so important, people don’t think to share their knowledge as well.</td>
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<td>sometime they don’t want to sometime even they don’t think to</td>
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<td>[one of the problem of knowledge sharing is lack of] actually seeing the value of doing of sharing the knowledge and also I understand that it is some cultural issues</td>
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<th>Appendix E.2: Underestimate value of their (user) knowledge</th>
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<tr>
<td>[lawyers sometimes not share their knowledge because off] lack of awareness that this could be useful to other colleagues.</td>
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<td>...our people might not know how to do it, but they never think to do it or never considered this piece of work would be useful to anyone or if it is good enough to go up there that is another one as well, oh this is not picky enough for, it is not high level enough to go up there.</td>
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<th>Appendix E.3: Demonstrating the value of knowledge sharing:</th>
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<td>(Researcher: Can the process of knowledge sharing and reuse be improved or better facilitate? How?) Maybe making people more aware or making it priority for people. we could do more to provide positive feedback or what example have know-how has been developed and how it has been useful;...Yes you can put it [example of sharing] on the divisional intranet send an e-mail around the group saying congratulations for so and so their contributions of the KDB which is used by so and so else, and that save them half days work or whatever in the client that sort of things.</td>
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<td>(Researcher: Can the process of knowledge sharing and reuse be improved? How?) [to improve the process of knowledge sharing and reuse, there should be]... impressing upon people importance of it, encouraging people, I think that we could do more of is providing good examples of how things have been useful to people. but you try to persuade people to do things more efficiently, that is what you are trying to do and you trying shift people's habit and if you cannot make is seem useful to, you cannot sell it to them, them the others ignore you.</td>
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[to increase the knowledge sharing and reuse] there is, it is mentioned in meeting and the seminars like that, but probably need to be bigger driver, and maybe to sell the business (to show its result)

I also think that educating about the value of it more important because if they never use the resources themselves then they never value it and less likely to contribute, you can give people time but they won’t use it but unless they value it first.

Appendix E.4: forget or ignore sharing (and reuse) knowledge
(Researcher: is there any other reason for not sharing?) Maybe people are not aware as well.

[lawyers get little knowledge from KMSs] mainly because of awareness of databases ... and no intensive to do it.
Although some are old databases but I think with high turnover of staff ... lack of awareness of the actual systems is a big thing too.

and it is more bit not because they are being selfish or just might not cross their mind and also time is big factor.

Appendix E.5: Constant reminding of sharing knowledge (and reuse)
(Researcher: How about reminding them, they may busy and not know the value of knowledge sharing?) I do a bit of reminding and sometime I remind the partner to remind them.

(Researcher: what are the KM lawyers’ roles?) their roles really vary from division to division depending on what they are asked for I think some of their role are to just remind people to share their knowledge and to contribute to the KDB remind them to use the DI.

Jo [a KM person] used to come around in few weeks and ask have you got anything to add to it [KDB]

yeah, just remind you, it is regular reminder
just importantly make them aware... lawyers are so busy ...they don’t get a chance to really see what is going on outside the area of expertise.

Appendix E.6: Cultural problem, knowledge is power perception
Some people you know end up over time with set of folders in their office for example, because they have done enough work over eight years ... keep their own systems and they do it for their own sort of personal benefit because primarily they work individually and they have to get things done and it can be difficult I think sometimes for the individuals to see themselves as a part of the bigger thing that is the firm and see the mutual benefit within that.

Well when it comes to sharing with, some people don’t want to share, they see it is their personal information and they see it perhaps giving them a competitive edge over other people but they know how to do this and other people don’t, ... so they don’t really want to share it.

Lawyers are typically competitive and guarded with their information I don’t fall on that mall I am a big believer in sharing information. ...., also the reality is that people
we work in mature legal market in terms of getting promotion if not as easy what is
used to be and I don’t think that lawyers do that this consciously but they will prefer
to keep knowledge for themselves because they get the sense that it empower them
and why they should share because it is their knowledge anyway and it provide them
with a competitive edge, now I am not saying I don’t think it is conscious thing I think
in a particular practice group that I work in it is not been an issue with me certainly.

[one of the problem of sharing ] is combination of competitiveness of lawyers

... people are competitive and busy, ...., people want to just keep their work to
themselves which is bad as well, it is the reality amount the lawyers and any group I
guess.

the other things about the importance of sharing knowledge as to degree you get to
your feeling an organization like this that knowledge is power so the idea of letting
go of some of your knowledge as threatening some people, because you know you
don’t become the person to consult on such and such issue because we have
database, so there is a little bit of that kind of institutional stuff as well.

Sometimes I say an unwillingness to share like thinking you know maybe it is more
valuable to just have knowledge themselves.

biggest problem or bottleneck in knowledge sharing is lawyers’ tendency to hold the
information

Appendix E.7: Cultural problem, fear of criticism perception

my concern is if I write a letter and I might think that is best thing that I have ever
written somebody else might read and go that is just rubbish ....

(Researcher: How about fear of criticism or something like that?) that certainly be a
factor but I am not so sure it is a major factor, yea there would be always a factor.

Appendix E.8: Cultural issue: lack of confidence

I contribute very little I guess because I am not confident that is good [laughing] but
provided to get approval from my partner for sure I would like to do that because it
is very crucial to cut down on time

(Researcher: so generally like to contribute but at the moment you're not confident
enough?) Yes that is right

(Researcher: yes that's the one of the reason generally people not to contribute?)
Yes.

dependent on how confident they are [laughing], if they are very confident in the
matters sort of being competed I think they would put a lot of content onto the KM
database for example, if they are very confident staff member so would share a lot of
information to the divisional intranet.

I think sometimes people underestimate the value of that knowledge they think of that
is not worth sharing but in fact that can be quite relevant.

Appendix E.9: Appreciate and promote good attitudes such as knowledge is not
power

we do have quite good here knowledge sharing (which indicate some good attitudes)
(Researcher: is there reason such as knowledge is power, they don’t like to share?)

look, maybe for some people, I have to say I haven’t actually encounter that, I have normally found people particularly when you ring someone up and say hey look at one of particularly guide about X and Y or I heard that you did this paper for a client would you able to send me a copy, people are very very willing to give their time and very very willing to their information but generally done on that bases and it is not that they want to or there is no affect with power aspect of something like that, it is just I think there is not necessarily the motivation and they are time poor.

(Researcher: how about thinking that knowledge is power?) I don’t see that happening as much, I think that happen less.

Appendix E.10: The cultural work in facilitating knowledge sharing and reuse

[to improve knowledge sharing and reuse] there need to be some sort of a bit of cultural change probably about sharing and the importance of knowledge and the fact that got a commercial value and should be valued and should be treated as something valuable that is a sort of cultural thing as the outlook may get changed and use cannot change that unless you get the partners to think that way themselves and make those sorts of statements. ...reward systems and acknowledgements systems and giving them some leave way their timing to the work would be very supportive, it would help that cultural change a lot.

I think there are number of factors involved with that there is the reality of running a business which means that people need focus on the jobs they are doing and as a result unless there is a culture of sharing knowledge that there is really promoted and people won’t share that knowledge and so it is a cultural question, making sure that culturally the thing that done within the team or offices when you find something you share with someone or team.

biggest problem or bottleneck is lawyers’ tendency to hold the information [as a solution] just getting them actually share that, probably changing culture shift.

Appendix E.11: Lack of incentive as reason for not sharing knowledge

[another reason is that] there is no incentive.

...the reason is that because of laziness, because there is not bill for it [laughing][not enough incentive] and it is time consuming.

...there is not much incentives, no, I don’t think anybody would object as an idea.....

I think that the main thing is that there is no incentive for them to do it, it is not built in for, there not goal for them to say have number of contribution every month or anything like that, we did try that and we did do that it tend to work but if people don’t have to do something they won’t do it.

I think the main problem that I see with the contribution are that it is very difficult to contribute currently and it is no incentive to contribute.

Everybody can do it but again you have got give either in my role in my spare time, I mean there is little incentive there to do it [laughing].

...not really [there is no incentives], ... if I do it other people might do it, if I help other help me, but there is no such getting extra $10 a week if you add it [laugh] there is nothing like.
there is no financial type of incentives to share to the knowledge, but is a part of what your job is, that is an expectation.

**Appendix E.12: Need to provide incentive for knowledge sharing and reuse**

[how can be motivated, does any incentive work?] yes, I mean [laughing] they are lawyers if you can give them financially incentives for contribution.

it can always be improved, pay for better incentives to do it.

what we've got in our practice group is we run a competition on a monthly basis that the person who contribute the most to the KDB in that particular month win the prize who taken the prize, a partner who coordinate that in sense of probably about two wins a months

what we also do as lawyers we are required to accumulate what they call CPB point so continued professional development and that required us to either write or we can accumulate points by writing research papers or articles or giving presentations so what we have in our commercial dispute group is we have what we call one Learning Seminar which is the continued learning education seminars

- is there any encouragement for knowledge sharing? we give it a very high profile team meeting we recognize people when they give a Learning Seminar, so yes in it, we have included our KM systems apart of everyone personal development plan they require to do certain thing in the KM area so KM contribution or Learning Seminars presentations.

, allowing lawyers who to work toward the targets get themselves sense of autonomy and ohh have you done your target! good, you know, so yea I think some sort of targets that connect with your performance result,[laughing], nothings is lawyers more motivated than that,-therefore, it might contribute to the performance review, so if you can wave this into the performance review then always some sort of performance outcome then I think people would be more keen to take the - board

**Appendix E.13: HI's involvement in encouraging people for knowledge works**

...and try them to get people to put material on [KMSs]. ...I seek contribution from people or I used to, I gone a bit slow on that recently, when I see people sending email around asking for example, for certain document, I then email them and say when you get the example can you give me a copy, I speak to people and say when you finish the matter can you give a copy of that(KM lawyer).

(Researcher: what do you do in facilitating knowledge contribution?) I chase people so I ask people whether they have anything to be included in the KDB, (KM lawyer).

(Researcher: is there any encouragement for knowledge sharing?) we give it a very high profile team meeting we recognize people when they give a Learning Seminar, so yes in it, we have included our KM systems a part of everyone personal development plan, they require to do certain thing in the KM area so KM contribution or Learning Seminars presentations(KM lawyer).

we encourage them to contribute, but it is quite difficult to get them to do so, I have in past go around and ask them if they had anything and offer ... (KM lawyer).

I have a role in seeing those things keep up-to-date and encouraging people to make contribution to them.
"...my feeling is that lawyers are not dispose to putting the stuff in the database is very much although varies from lawyer to lawyer but one of the biggest challenges I find is actually I spent a lot of my time [laughing] trying to figure out ways to generate content and to encourage the practitioners to think about generating content themselves and to making contribution (KM lawyer).

... what we do is essentially facilitate contribution to the KDB,... I see my role as being in committee and encouraging others to facilitate as contributing to the KDB in indirect way. (Researcher: are you assigned as a part of your job to encourage people to contribute?) Yes what we've got in our practice group is we run a competition (KM coordinator).

[to improve knowledge sharing and reuse we need to] ensure that there is a better follow up and encouragement in getting lawyers to put information on that KDB.
[to facilitate knowledge sharing a and reuse] maybe more emphasis should be given on putting more articles on there, so people encouraged to do.

**Appendix E.14: Just encouragement is not enough**

<table>
<thead>
<tr>
<th>there is [encouragement], it is mentioned in meeting and the seminars like that, but probably need to be bigger driver, and maybe to sell the business (to show its result)</th>
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<tr>
<td>there is a push from partners to use KDB but not too much used, they talk about it but never happen,</td>
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[to facilitate more knowledge reuse and sharing] any encouragement from partners rather than say the message coming from librarians [is more useful]

**Appendix E.15: The lack of usage and awareness about KMSs**

...it has not been articulated to the people on the ground why they would possibly look at something like that. Definitely there is lack of awareness, ... I don’t think many lawyers even look at the public internet, I don’t think they even know that there are expertise on there.

I had one partner that seem to did not even know to open up his, I was doing some training did not ever know how to find, where is intranet what an Intranet was or how to access it.

other problems are there you know maybe people share that people don’t aren’t aware to go to find that information that has been shared so maybe sometimes it is not publicized that people sharing information.

sometimes it is the way they search as well, like people when they search the KDB when I watch people search they cannot think what the keyword would be ...

...so that sort of things needs to be addressed so you know the way that search engine function and the skills that people have got in using search engine, when you are talking about the databases both individual and technology be making it possible to refine the searches promptly as possible is a key things.

...if division such as DR that uses the database quite a lot maybe because the partner in the division made them what you find is more and more people contribute to database, and the more they contribute to the database the more useful become to everyone else but when there is no concentration and no emphasis put on using the database then people obviously don’t contribute.
Appendix E.16: Time as a main factor in sharing knowledge

- any others problems of finding the receiving? I think that is also the nature of work all of the time prevent them from sharing knowledge effectively so they have all of the time lawyers get very busy what I find is to have their blinkers on and they are concentrating on end goal and they forget along the way to share information as they are going along because they don’t have time, and what happens to do that at the end of the transaction they forget altogether what knowledge they have to share all that tacit knowledge is lost.

I think that is largely driven by workloads you know when you finish a very important piece of advice for example, on a file then mostly you be concerned to get that sent to the client as quickly as possible because it is mostly going to have been taking longer than what you estimated it would take, with clients waited longer than you wanted them to wait and it means that you sort of spend more time on than you can charge them for say[ laughing] you know circumstances what you want to do with that task it finish it and get on the next urgency.

because there are people who just don’t do it because there are people who are too busy.

the information can get out of date quite quickly needs to be updated continually so required a lot of input from different people, ...people don’t have time to do that.

I think it [preferring to share knowledge with people rather than IT basis systems] mainly because of time restrictions what you find is in our group lawyers will are busy and I also.

my feeling is that they prefer to share directly with people, just simply from the time attached to actually add to a database or work out where they want to put it or so it is, the time is not seen as high value add for indivisibles.

people don’t share knowledge I think because of the time.

Some people just cannot be bothered or they are too busy and all just goes into a withdrawal.

the other thing is that as I saying the lawyers get very busy in their practice and so they just forget to actually contribute or share their knowledge unless that facilitated they just don’t.

you know [the problem is ] people are competitive and busy.

and even if we aware it takes long time to ... and then upload it onto database.

[why not people sharing their knowledge ?] I think some people do not share because they are time poor, it is just I think there is not necessarily the motivation and they are time poor.

[why they are not sharing?] time is always factor.

Appendix E.17: The way firm works, time for KM work is not billable and priority

- Time: you can put stuff to side when you are quiet or you don’t have to work in it then you spend the time doing it, but you very rarely sacrifice law, I would not necessarily sacrifice a billable for non-billable unless is very regretting for it, ... so there are non-billable have to take priority but generally Know-how [contribution]
or that type of thing falls after your billable works

the reality is we are under pretty tight budget constraints timelines to achieve certain goals, knowledge is not valued in my opinion as highly as what it should be, simply I need so many hours in a day and when it comes to choice between working for clients and getting a good project result versus dedicating time to precedent building and KDB the client works win hands down but having said that our group really is very proactive.

...Obviously the more senior a lawyer gets, the more costly their charges are, a client simply cannot be charged in many instances for gathering know-how and we don't.

it is not bill for it [knowledge works] [laughing] and it is time consuming.

I think that is also the nature of work all of the time prevent them from sharing knowledge effectively so they have all of the time lawyers get very busy ....

time is certainly is issue for us but also the metrics and firm likeness based around time but based around the time that you can bill, so time spend on more sort of public good exercise for firm like developing KM are not valued the same degree because you only have really 30 minute a day that you don’t something else and I spend some time developing business rather than developing know-how.

there are non-billable have to take priority but generally Know-how [contribution] or that type of thing falls after your billable works

I think there has been a recognition that KM is very important but also that the main function of the practice groups is the practice of law and so the reality is most lawyers will put the practice of law their priority and if they have sufficient time then they will do know-how.

One of the other biggest challenges is about know-how I notice is that, you know, it falls to that general category of not billable work and it is not that people necessarily oppose to know-how or to do in work that is required, you know, there be a range of reaction that some of them might even find reasonably interesting but it is because it is not billable it is going to fall toward bottom of their pile in terms of way they prioritize their work which is sort of natural.

simple reality is unless the partnership recognizes know-how and information gathering and dissemination of information as a part of lawyers budget they would not get the level of know-how that best suit the firm, so in some ways it's there is a short-sighted approach and unsighted approach without being you know as a bigger picture and also the divisions. Departments as I mentioned earlier our department relies perhaps most heavily on research and also our department in terms of you know the head of our department has to go to national meeting and have to account for his department's budget performance, so there are so many tensions and pressures that while it is recognized that information is important there is almost prioritization that invariably sees know-how for below budget, and you know it's a shame.

Appendix E.18: Creating balance between billable work and KM works

-when you bill you bill a client for value added, who is gona [going to] bill for you for value adding to the firm, either (or) firm is not going to pay you to if it done that, it just part of your X non-billable, in my section, my partner expect you know 20percent of your time in the firm will be spend on non-billable work and that is just
part of that, other partners might have different expectation

- ok? One of the other biggest challenges is about know-how I notice, I am going to have to go in a minute, but one of the other biggest challenges about it is that, you know, it fall to that general category of not billable work and it is not that people necessarily oppose to know-how or to do in work that is required, you know, there be arrange of reaction that some of them might even find reasonably interesting but it is because it is not billable it is going to fall toward bottom of their pile in terms of how they prioritize their work which is sort of natural.

[create this feeling:] - is no financial type of incentives ... but is a part of what your job is, that is an expectation

the partners can make a huge difference in making the decisions to make time spend on knowledge collection and like forms part of our budget, you know that could have a big impact.

Appendix E.19: The value of the knowledge sharing

the problem is the way the firm like this works it’s changing a little bit perhaps but the way that we in principal work for our clients as based on number of hours input we do for them so the value is tested by number of hours worked, what we don’t do so well is actually to say we have got spring collection of intellectual property we could use ten hours to produce this piece of works from scratch but we have got a precedent here which means that we can do it in one hour but what we do we don’t really want to do that because then fee around this to charge on is one hour instead of getting them the full value of that service now what we really should do is say the first time we do that, well, might takes 10 hours to do what I need to charge client for five hours the next time we won’t charge for any at all but all have a fix price on it hopefully at 5 hours and also 10 times and we make next profit out of that, even no we are actually spending much time on it but the fault mechanism for must working as, you know, fee is in as should spend certain amount of time doing something.

Appendix E.20: Including knowledge sharing as work requirement

(Researcher: you are talked about the lack of incentives?) Well incentives and a push as well so for instance in order to process the professional development’s goal each year maybe you can say to the divisions you met to contribute three things to the KDB, and three things to the Intranet

(Researcher: so who is responsible or who should do this encouragement or provide incentives?) The partners in the division should do.

(Researcher: what kind of incentives do you recommend?) Well things like that what I mentioned before so letting them know they have to do something before the performance development plan and they have to contribute three times for instance the KDB or three times for intranet etc

(Researcher: so incentives or somehow pushing or forcing them to contribute?) yes encouragement.

... rarely [people share] only the people who come and sit in my drafting group and things like that so they are all transactional lawyers..., no one officially does that, no one has it as his job description.

- in personal annual plan some may choose eg. to have 3 contribution to KDB
- you know I might do ten KDB entries and I don’t do any seminars I don’t do talks I don’t do then somebody else might not write any written advice but they do a lot of seminars, so there is different aspect of one area which can contribute sharing knowledge

(Researcher: is there any encouragement for knowledge sharing?) we give it a very high profile team meeting we recognize people when they give a Learning Seminar, so yes in it, we have included our KM systems a part of everyone personal development plan, they require to do certain thing in the KM area so KM contribution or Learning Seminars presentations (KM lawyer).

**Appendix: E.21: The difficulty of contribution to KMSs and nature of knowledge**

the other thing is not everything we do is amenable to being turned to a precedent, so for example, with my tend to giving advice on similar issue again and again and again, the opinion that I have written aren’t really going to be much help to anybody else but for me that sort of captured a line of thinking that captured my expression of legal issues and some kind of paragraph that useful to explain to clients, sort of very useful to me but not really that I can turn to precedent.

Yes, again in the same context, working together on a file, I put thought on to, the other things is knowledge one part of what we offer to our client about what is the legal position on things but the same time it is kind of analysis and sort of matching knowledge to the situation that people get themselves into, so it is kind of knowledge being something that can be maintained and the things itself to being packaged and put on DB or something, this question is hard.

...it is a very good culture of sharing information and certainly no desire to keep it away from others, but it is just not necessarily all put on the central databases and not necessarily keep up-to-date or structured way a lot of it are informal.

**Appendix E.22: Learning seminars and meetings**

we have what we call one Learning Seminar which is the continued learning education seminars at least once a month usually two and that will involve typically two our lawyers within our group researching a topic putting on the database but actually presenting, we will go a meeting room and they will present the information that they have learned whether it will be about the specific file or a specific experience that they have had a research development in a particular area of law and they will present that information to us and that forum give us the opportunity to meet face to me and then-to-face share the information and also ask questions.

I think because my experience as being that sort of interpersonal sharing of information so asking question and getting answer across the table or over email, because it is this way actually getting the piece of information that you want, anything that happens to facilitate that kind of exchange is useful, so if we have virtual team meeting once a month or once every two month to actually share experience on points that is useful, and anything else that actually sort of facilitate sharing of knowledge is useful too.

Well I am in charge of every things from who is in the team to what’s on the agenda to focusing the content of people’s presentations to assessing them to prepare the documents in advance and after the meeting to deciding how we are going to run the
meetings to devising system so making sure that things get captured in terms of 
advices and putting the knowledge management tools and so on.

... certainly we have to do seminars that is part of our role and what our partners say 
we have to do so yes we are very good at doing that but in terms of actually sharing 
our individual work we are not good.

... also sort of formal information exchange make thing, you know, a few just have 
come off a big projects we have really learn a lot about the government approaching 
employment matters or something in my area, you may do that, to the extent you can 
do some internal seminars to kind of share your perception of perspectives on what is 
going on there that is very valuable.

... [we] have regular seminar update sand [to facilitate more knowledge reuse] I 
guess having more seminars is useful.

in the sense that people just sharing their knowledge of human intermediary, 
somebody who learns a lot from project can sort of tell the group about what have 
learnt that is something that can be improved and be useful, people who could 
actually go on and say hi John you’ve just been working on this project I think other 
people would like to hear about it, I think other people could learn from your 
experience, the senior manager or KM person can actually play that role that is 
useful too, another things like that, thing actually either things that get information 
moving around the place is useful.

Useful to share knowledge in meeting: 
we have a regular group meeting but they are vary in utility usually is not for sharing 
knowledge, we talk things like administration we usually try to keep in touch with 
what each other doing and if there is particular issue that we should talk about it we 
talk about it or if there is particular sort of business development initiative or 
something like that we talk about those as well in this kind of meetings, but seldom 
we say we just done this, this are the lessons that we have taken from it, going 
forward you guys should be thinking about this and that, we would very seldom do 
that kind of discussions, while it is useful for knowledge sharing if we talk about this.

Appendix E.23: The need for yellow page or skill directory

[there is no such a yellow pages] we have a telephone directory which is also list 
out the expertise but I think it is commonly understood that it is out of date so you 
would more than likely talk to colleagues about that and say who knows, do you 
know someone who know something about this.

at the moment there is not yellow pages or skill directory, no, the information live in 
many different places if someone was looking for it they might look on the intranet 
they might look on the KDB they might look on the public internet but there is no 
one place for them to go.

We have the internal phone books that not only list by alphabet but also area of law, 
... you can know their CVs or expertise, there are all in the intranet. ....our 
marketing division would probably know in relation to partner at least who 
specialize in what. But we don’t have any yellow pages, skill directory. I think Jo [a 
KM team member] was in charge of consolidation a similar type of database but 
that disappeared, there was an attempt to consolidate people’s interest and 
expertise but it hasn’t really works.
Yes [there is network facility but not yellow pages], but it is word of mouth, it is informal, developed network by users.

[about skill directories] I would not say we have much work to this, because the nature of how lawyers work they are quite individual.

we actually have a project that we are looking at the moment concentrating on expertise we haven’t actually done anything with it but the idea is that we pull up the expertise from the actual practice management system so where the lawyers put in their how much time they spent on particular client we are looking to link into that kind of data to pull out how often someone has worked in a particular industry how often they work to the clients.

That would be excellent if we had (facility to able us to network with other branches of the firm), and we got the capability we just need to put in place

Appendix:E.24: Facilitating knowledge generation- precedent development

... I facilitate the drafting group where there is a lot of sharing of knowledge and production of the precedents and I supervise the precedent being put onto the Precedent Database (a KM lawyer)

That is another person’s job, it is ‘Y’ she is in charge of allocating people to draft precedents and then get them put on the database.

She [KM lawyer] would be responsible for consolidating particular advice work that we have produced and making sure of push onto the Intranet in orderly way and updating it.

There are few people probably about three people within our group see lawyers who are responsible for developing precedents.

Appendix:E.25: The lack of knowledge in KMSs and knowledge capture

one of the problem I see with using the database is if you got a very specific question, if the answer is out there it would be very difficult to find and often is not out there so it can be very time consuming.

[about the KDB one of the problems is] there is not enough information in there.

the problem is lack of enough good things maybe in our group to put things onto KDB, so there is more focus on each person having their own little set of folder or own little set of advice folder, because of laziness.

(Researcher: is there any problem such as the knowledge in there is not updated?) Oh absolutely I mean (laughing) if the databases is out of date no good to use it.

the other kind of information that I sometimes like but cannot get as, sometime would be good to try and capture the firm’s knowledge or previous analysis on legal issues so for example, if I am dealing with section 46 of track practices at, but be very nice to be out search to see what advices have been prepared on the last 6 month dealing with section 46 of track practices, so that sort of capture a little bit of analysis is going out there, but ... we don’t do that, although the one we do do that as you talk to somebody and say yea John in Sydney just address that question you should talk to him so you see the advice and that is really useful, but it is informal network rather than something that is captured and that is the real challenge across
the firm of this size because partly it is KM issue but also it is risk management issue involve as well because if we advising two clients and completely in different ways that is not just a good look and also risk, ... that is a potential problem.

Appendix: E.26: The role of capturing knowledge

probably would be a lot more efficiency, especially when people leave, it is all gone. I think law firms generally have about 30 or 40 percent turnover 

..., once I got batch material sometimes when senior people leave I get their folder and go through the folders to see what is there, whether anything would be interesting in keeping and I then have to sit down and make the decision to which one I put on and which one I would not depending how many categories we already have and that kind of things.

we spend some time thinking about how to make that happen ... I have been here and first time I went to speak at it at least one of the partners in this group, you know the first thing he said was the thing I want to see captured is the knowledge with the head of law, what he meant was you know there might be some unanswered question about the provision and the statute which comes up from time to time and we write letters to our opposing solicitor about it and then we set the cases but there is no decision of a court to tell us whether their argument is right but it is too useful to know what the argument is and how to put that argument you know that sort of things, and but you know the systems are actually there in place for that I think he misapprehend the extent to which that material was actually being captured but that's the stuff that you want to know.

so [my role is] making sure that things get captured in terms of advices and putting the knowledge management tools and so on.

there be a lawyer whose responsibility is to make sure that they collect KM information and distributed within the team and work with that person.

Contributing is optional, Jo [intermediary from KM team] used to come around in few weeks and ask have you got anything to add to it [KDB].

I know in corporate group not in tax group, they have a dedicated person two days or three days a week, paralegal I think, and all they do is go around and see the lawyers and say do you have some things to KDB, collect it and they put it on, and that is every week.

... so I cannot get access and got to find a friend and ring to go find something from the folder which is very inefficient, while in online put it up in KM database which be perfect, but we need somebody sit down and put it onto the database.

Appendix: E.27: Privacy and confidentiality

significant letters for advice always must be signed by partner, generally he would say put this into database or don’t do that because of secretive or too confidential don’t want people know about it

The obstacles I see in people contributing go back to lack of time issue also we have got to be very careful as lawyers to protect privileged information from our clients, Copyright is an issue, it cannot include certain bits of information if adding it to the database will infringe copyright and also this goes back to client based information
we have got to be very careful because to avoid conflict of interest so what that
means is all of the document that would be used database will to have them
database have to go to the process of we called being sanitized which means
removing any identifiable market to a particular client.

so some problems might be privacy on documents and managing the security of
documents and making sure that is appropriate.

lawyers generally share by talking to each other ...what lawyers don't do that they
don't share stuff in a system based way like on the intranet, very few people I think
probably do ... it is one o one rather than sharing to the public, yea, I think it is
largely because people's client aren't confident. ... Due to the confidentiality
requirement probably I don't contribute to the systems.

[as a problem of knowledge sharing] people are worried about confidentiality, ... in
the fear that the information will be dispersed to other people that should not,
because a lot of particularly our work is quite sensitive, ....[need to] eliminate all
the identification.

Appendix E.28: The role of helping to contribute knowledge
depending how many categories we already have and that kind of things, and then I
do like a coding sheet which sets out the details of the document and most
importantly a sort of trace of the document and keywords and things like that and
then I give to the WP (work processing) peers who actually does the data entry for
me.

If they haven't classified that work then I will classify and arrange to be posted.

I supposed they need to now work out how we are going to do without her [she left
HI], at the moment ... I have got one or two document or this thing in my tray to go
to KDB

[they contribute DI] yes that is probably much rather than very much because the DI
is a sort of informal source of information, what happens is people send email and I
then convert that email into contributions to the intranet
- so they way is through you? Correct.

[for contributing knowledge except that precedent] they just come to me.

That works mostly come from either sit on drafting group or they give me document
put on the DB, so quite a lot.

yea we [KM team] often help in contributing knowledge as well for instance with X
office our lawyers are very busy so when they have something to the KDB they send it
to us and then we put it up.

[about my relationship with KM team] used to somebody to come and ask
contribution and give hand and that was good I am not sure if actually contribute
anything.

I would definitely if I wanted to upload [contribute] any things I would go to the X
[KM team member] because she knows how to do it [laughing] but it is probably my
own negligence in not being up to speed on how to actually do myself.

but you said small part of job in sharing you send to KM team to do? yes.
sometimes [KM team involve in contributing knowledge] only to help in terms of high
use but it is not the norm.

I think that happen maybe much because you know the lawyers or partners will come to us and say this is something that everyone should know about so help me get everyone to know about this so we [KM team] often here to facilitate that.

- in these area, helping lawyers to contribute, your role can help them? Hopefully, it is a frustrating process.

I facilitate the collection of KM contribution.

**Appendix: E.29: Knowledge distribution**

<table>
<thead>
<tr>
<th>the e-mail alert that KM team have established and it is very useful, in our alert so Lexis Nexis daily alert, which is an industrial relations resource online source, KM team has set that up for me and my colleagues so that the we will receive daily update as they come through, they also compile news feeds which basically summaries the news from all the major newspapers and I 'll send that through, so those type of thing are incredibly important.</th>
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<tbody>
<tr>
<td>but I know that they [KM team] send out weekly newsletters updating people, so they subscribe a lot more things than the lawyers would have to and they distil that knowledge is so the lawyers don’t have to.</td>
</tr>
<tr>
<td>They [lawyers] would get sort of updates on a recent sort of changes in the area of laws and also updates on things that are specifically related to their client, ... Yes by weekly e-mail and it is not directed to just one lawyer it is more directed at the practice group.</td>
</tr>
<tr>
<td>- every few week KM team[ ] send out update about different area that been added to or contributed to.</td>
</tr>
<tr>
<td>[as another source of knowledge ] I think KM sometimes send email alert, we [KM team] do have a series of bulletin for go once a week on different topic that alert people to the various key topics that they can subscribe to.</td>
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**Appendix E.30: Users and KM team appreciate the researching role of librarians**

<table>
<thead>
<tr>
<th>They [KM team] assist me with research tasks, so they assist me in locating resources, they are more of server research function particularly with regard to legislation and regulations and things, so I’ll ask them to assist me in searching for further research so they themselves do not provide me with the answer of the high value they are more of low value directing into the right area, but they are critical.</th>
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<tr>
<td>[asking librarians to do research] yes that is right, so finding some research done or if I need some access to some KM material they will get it for me, I will ask them for it.</td>
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<tr>
<td>[kind of knowledge that we get from KM team] is generally KM that we are requesting a lot of them would be research based.</td>
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<tr>
<td>...we don’t really have to rely on individuals but when for instance anything that is not available in our intranet I find the librarians incredibly useful.</td>
</tr>
<tr>
<td>[I contact with the KM team] sometimes during research or sometimes just obtaining articles or cases that I don’t have access to via intranet.</td>
</tr>
<tr>
<td>KM team, they probably are the biggest sort of research source of information ....,</td>
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</table>
they would probably be only one.

We have limited KM resources, you know X [a librarian in KM team], she is very helpful on library staff I get probably much useful information from them.

KM team idea:
KM defiantly does [facilitate knowledge flow] basically when a lawyer looking for a particular kind of information they ring KM start off with and that could be things looking for a particular case material looking for legislation yea looking for information on business industry or client.

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<tr>
<th>Appendix: E.31: Emphases on the general research roles of librarians</th>
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<tr>
<td>...also things that our research librarians and business resource librarians put together which they publish on the intranet, such as, you have got things like industry newsletters and topic specific updates newsletters.</td>
</tr>
<tr>
<td>...and because of my background in business I also participate in to a large extent into the business research in the firm so providing firm business research and notably profile of companies and industries to support the business development so projects that around of those.</td>
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<th>Appendix E.32: Library and subscription work</th>
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<tr>
<td>You do need the KM people who are keeping the systems maintained and ... all the library work..., they provide the library resources and research librarian.</td>
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<tr>
<td>They [KM team] will develop other parts of our intranet like the research tools, so all of our subscription to electronic databases externally they will also update other parts of the intranet..., what they do is their expertise lies in keeping up to date with the external information provider is in terms the tools that have been offered and the subscription that have been offered, so they are responsible for doing that and....</td>
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<tr>
<td>... in terms of the other type, KM people are responsible for helping to identify and purchase the commercial databases or whatever have to be.</td>
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<tr>
<td>... Yes the KM team, if I want a subscription so daily News feeds I will get that set up with X [a librarian] whether it be legal express case base whatever, but it is an external we have a combination of—that set up an external news feeds, external feeds come through one of this our subscribers.</td>
</tr>
<tr>
<td>Need for this function:</td>
</tr>
<tr>
<td>[one of the problem is] we have limited access to the some of the information sources that I would like to use...,also some of the subscription services that one can get, my practice by its nature is quite international and I am dealing with issues such as international trade rules, things goes on US thing goes on Europe as much as things going in Australia, in that context we have for example, .... so that are limited subscription service for Australia.</td>
</tr>
<tr>
<td>what we do the KM team, does a few different things so there is a library team and they manage the library resources and research resources.</td>
</tr>
<tr>
<td>third party commercially available research tools are available that we get on subscription bases and they are available electronically via the interact.</td>
</tr>
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**Appendix: E.33: Problem of knowledge presentation and difficulty of using KMSs**

[one of the problem of finding and receiving is] putting information in right place, (Researcher: So there are not in right place probably?) yea all finding right information maybe my search terms are not.

(Researcher: What are some problems with finding and receiving knowledge that you need?) I think the classification in the databases, ...not so much with divisional intranet because that is much more sort of informal but something with other two systems.

one of the problem I sign with using the database is if you got a very specific question, if the answer is out there it would be very difficult to find and often is not out there so it can be very time consuming.

(Researcher: So the knowledge in there need to be more categorize or sorted or something's like that?) yes, [if the things not organized might make a problem].

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**Appendix: E.34: Categorization or other knowledge works in the KMSs**

- Occasionally for KDB, we will go through and sit there if some document's link is still working, some document just no longer relevant we will point out to group of.
- so with respect to library issues, we will catalogue any things that comes into the library, with respect to journals that come through.

I think that is really important is to try and present things in as streamline and attractive way as possible and it is something that lawyers are not necessarily good, you know I mean we've got a structure for this wiki thing in our group which is appalling unwieldy because it has been designed by a lawyer .... so presenting that stuff in a way that effective is difficult.

I also run the national real estate intranet, I was involved when it was created I was one of the two people who basically designed what the content was onto it, I mean work following template because we were the last division to get an intranet, we follow the template the other division had and then we had to make our own decisions to what real estate specific material and categorization so we want, so we set that up.

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**Appendix: E.35: Filtering or summarizing knowledge on KMSs**

I essentially filter the information that come to me or cross the division and then decide whether it is good idea to be posted to the DI. (KM lawyer)

....I know that they send out weekly newsletters updating people, so they subscribe a lot more things than the lawyers would have to and they distil that knowledge is so the lawyers don’t have to.

[what should they do to facilitate knowledge reuse is] Summarizing article or emails and also sending some in databases to prevent information overload.

every things done by email, so I mean it is only as useful as the time you invest in it.[Information overload.]
Appendix E.36: The importance of the search facility

(Researcher: If it is not useful for example, law changes, why stay there?) for historical purposes, that point time and might be relevant to someone to know what the law was in that particular point of time
(Researcher: But maybe need some categorization to prevent overloading?) search function is supposed to do but unfortunately searching is not the best could be improved that is and IT issue and oppose to KM
(Researcher: But you should initiate or ask them?) yes. (lawyer and KM lawyer)

Appendix: E.37: The quality of KMSs

from my perspective the KDB has problems in, that is nobody monitoring the materials going on to it which I think reduces the confidence of people using it and nobody is going through and checking to, there should be really some systems put in place where someone checks everything on there at least after five year or something to see whether still relevant or whether still correct or whether the laws since changed or, there is no system like that in place, I see that a problem myself and as a user I would have much less confidence because of things like that.

the last issue [about the KMS] would be just too general or publicly available and it is not what you are after. (Researcher: So maybe not high quality knowledge in those systems) Yes.

[another problem with the systems is that] the quality is not good.

I assume it is helpful that [KMS] is a lot faster..., provide that the information is putting there is good quality information and that is up-to-date.

[I use the KDB little, because] it is not comprehensive DB.

their [firm, partner] main concern is to make sure that the information are sharing to our colleagues is accurate and right.

I suppose [users concern] just be updating and make sure if there is footnotes in a documents or reference to a case is right references and right footnotes thing like that.

[to improve knowledge reuse it is good]... having probably some kind of quality check.

Appendix E. 38: Encouragement for contribution - quality control issue

... the database approach was emphasized heavily by one of those offices not this office and, you know, in one stage that office in a desperate to promote the database, set and keep performance indicators around the number of contribution to the database which is fine except that people then focus on the number of contributions rather than the quality of contributions so you have a lot of rubbish in the database just for the sake of being able to say I put in my minimum number of contributions this week this month or what are so, no databases is useful if the content of this is not useful and so the decision making process about the quality of content I think is
really the most important thing from my point of view.
(procedures for contributing is need because) I think to be sure that the information
used is accurate, more people contribute all the time information might not be
accurate and then you have something on the databases that is not useful.

**Appendix E.39: The quality control of KMSs by KM lawyers or superiors**

sort of oversee the content make sure that is accurate make sure that is well written,
you know a lot of, because I am drawing my legal skills my academic skills my
editing and writing skills and I am also trying to inculcate those sort of skills in the
memos of practice group of so that is not just a matter of dumping in the places.

checking the quietly is what I (KM lawyer) try to do here, ...to try to help people
make decisions about why something is important you know particularly younger
lawyers... to understand [for example, there are] lots of decisions but not every single
thing about a case is always important that would be some important things about
you have to try pick what they are, so there if you are going to make contribution to
some database which tries to capture the important part that is the thing after focus
on, it is figuring out what is important.

he [partner] signs because firm has strict sign off things, so significant letters for
advice always must be signed by partner, generally he would say put this into
database or don’t do that.

I keep saying to them, please you need the senior lawyers to review what is going on
because it is time consuming and can be time cost and so on those who really wants
to do that part of the work so they can to push it on to junior lawyers and junior
lawyers don’t have sufficient knowledge or experience to be out make the right
judgment about it, so it is a problem.

**Appendix E.40: Adding meta data**

precedent for example, might have a boil plate in there which is standard but there
might be no notes accompany the precedent indicating why the boil plate in there and
what you should not change about it or what you need to be aware of if you want to
remove it.

any contribution is always equally marked with the dates on which it is current, so
any person that accessing that particular document for information will know when it
was last reviewed.

I am also trying to inculcate those sort of skills in the memos of practice group of so
that is not just a matter of dumping in the places but also you know being able to
explain to third-party why cases is important why particular documents that they
developed is useful or something.

Need for metadata around precedent:
we are required to fill out a lot of court forms, what I tend to do is when I have to do
particular court document that have not done before or even some done it before but
long times ago I look at that precedent database print off a clean copy which give
you a bit of guidance and instructions on how to complete the form, then I will go to
before I read the actual precedent I will go to the computers server and I will
research for I look for a completed version of that particular court form typically I
rely what happen in the law or what I do is the learn to trust or you learn to trust
certain people skills and knowledge in different areas so for instance if I am doing a
particular type of form I know that my colleague X is particularly good in those sort
of things so I will look for a document but he or she is done to give me some
guidance to how I should complete the form as a combination of the precedent
database and our internal computer server or our computer network and the work
that my colleague already is done.

Appendix: E.41: The problem of KMSs which are not updated
from my perspective the KDB has problem in that is nobody monitoring the materials
going on to it which I think reduces the confidence of people using it and nobody is
going through and checking to, there should be really some systems put in place
where someone check everything on there at least after five year or something to see
whether still relevant or whether still correct or whether the laws since changed or,
there is no system like that in place, I see that a problem myself and as a user I would
have much less confidence because of things like that. (need for human intermediary)
... yea the KDB is not often updated that make it a bit difficult.
KDB is not up-to-date or there is not enough information in there.
the information can get out of date quite quickly needs to be updated continually.
(is there any problem such as the knowledge in there is not updated?) Oh absolutely I
mean[ laughing] if the databases is out of date no good to use it.
by the time the knowledge is input into the DB is not always current.
and also in the law is important to make sure that the information you're reading is
current, I find the currency as an issue.
possibly [materials on them are not updated] but it is less probably with KDB maybe
other databases they are not, maintenance not given high priority.
...because why people look at it [KMSs] while if everything on there is old.
consistency is a problem with finding and receiving knowledge from KMSs, it means
some of the precedents on the intranet often not up-to-date, and likewise the type of
thing if I want to go the KDB are not up-to-date or they are uploaded a while ago
and in ad hoc way, so consistency being a bit ad hoc not being reliable in a sense
that there is not a consistent process of people turning their mind to type of things
that they might want to uploaded it and actually doing it ..., so problems consistency.
Problem will include finding the most recent case law, the most accurate and current
position of the law at the time (so the KMSs may not be updated?) Correct, or may
not reflect the current position of law. ...just it is very difficult to keep up with the
law.
- I assume [KMSs] are helpful that is a lot faster..., provided that the information is
putting there ... and that is up-to-dated.
- [KMSs] continues to grow, they do take of thing that are no longer relevant if areas
changes they take them off.

Appendix E.42: Need for update, because of fast changes in law
...changes made quite quickly, need to make sure that if the changes has occurred,
that the document has been updated
So there be a lot of last-minute sort of things and you cannot always pre-empt things
like something you can pre-empt like legislation change or something like that then you know that something is coming there is the times you know it can be difficult.

- but changes made quite quickly, need to make sure that if the changes has occurred, that the document has been updated, so I suppose just be updating for make sure information or....

- is changing fast (new laws everyday in tax) they need to be updated.

[in updating KMSs] I don't remove anything from the DB I only add things to DB, so if anything is old I don't remove I just leave it, ...for historical purposes, that point time and might be relevant to someone to know what the law was in that particular point of time.

Appendix E.43: Ambiguity of responsibility of updating the systems

Occasionally for KDB, we will go through and sit there if some document’s link is still working, some document just no longer relevant we will point out to the group. [but] once the document entered to the database difficult to get out, ... so they ultimately need to be responsible for the advice that goes out under their name.[KM manager]

(Researcher: who is responsible for making these databases current?) It's a team effort, so that's why it is very important what we have in place protect against that is any contribution is always equally marked with the dates on which it is current, so any person that accessing that particular document for information will know when it was last reviewed

(Researcher: is that the responsibly of all people or some people are signed to do updating?) again it goes back to the KDB committee encouraging everyone you know we like to see everyone's responsibility to contribute

It is shared responsibility because to know that something is out of date you often have to have that content kind of expertise so sometime that would come to the lawyers and then they request we do an update or no sometimes it will come from our librarians and they will do go update themselves

(Researcher: But who is final responsible for databases?) With the final responsibility the content of the databases is KM team

(Researcher: so what is practice area staff role?) their role is to contribute and to let us to know something is no longer of used to them

-as far as I know you don't have too much specialized or legal knowledge? No, half the team does but half the team doesn't.

(Researcher: is there anybody who makes it current or updates the KDB?) oh it is my[KM lawyer] job [but with helps of lawyers] yes I cannot do anything unless I get the information from the lawyers. I probably spend about 20% of my time on that.

yea I [KM lawyer] do check DI to be current, ....but [about the responsibility] the policy is that everyone is responsible but reality is that no one does it so become my responsibility.

(Researcher: so who maintain or update these databases?) A combination of technology maintain the hardware KM team maintain the precedent database and the KDB, a combination of KM team and staff in the divisions maintain the intranet, ....

(Researcher: who updating these systems, or if any changes happen put in the systems?) it is lawyers who do it.
(Researcher: so they expect to be updated by lawyers or they themselves?) I think mainly by lawyers.

(Researcher: if that knowledge become out of date or not useful, do you come back to revise?) no, it just is there.

Occasionally for KDB, we [KM team] will go through and sit there if some document’s link is still working, some document just no longer relevant we will point out to group of.

once the document entered to the database difficult to get out, ... so they[lawyers] ultimately need to be responsible for the advice that goes out under their name.

I [KM lawyer] have a role in seeing those things keep up-to-date, ... some of the databases that right it is sort of oversee the content make sure that is accurate make sure that is well written.

the information can get out of date quite quickly needs to be updated continually so required a lot of input from different people, ...people don’t have time to do that.

Appendix E.44: The responsibility of running KMSs and KM affairs

assist KMSs management: I think the best way to describe my job is to say that it is to assist in the management of the systems for knowledge management. (KM lawyer)

I had a quite a big role in the KM database, this division did not have its own space in the KM database for many years and I pushed we got that space and try them to get people to put material on which was a very slow start but subsequently over the last 12 month the various other offices become quite interested in the KM Database and they has been putting a lot of material on and has been quite turn around..., so the KDB now has a sort of critical maps of materials sitting there I think becoming useful for people.

...I facilitate the document being put on the KDB and run the divisional intranet. (KM lawyer)

I also run the national real estate intranet, I was involved when it was created I was one of the two people who basically designed what the content was onto it, I mean work following template because we were the last division to get an intranet, we follow the template the other division had and then we had to make our own decisions to what real estate specific material and categorization so we want, so we set that up, the other person subsequently left so it is now me and I am the person who set their works out whether any improvement we did make I get things out on and now also do the interactive front page to it which is like legal update in related the cases, ..., I am the one who knows all that on. ....(Researcher: So you provide the input of Intranet and update it?) That is right. ...sometimes I get email from people suggesting things should go onto the DI, there is couple provide me with things like Learning Seminar that is continuing legal education schedule and I put those up, sometimes I get people saying look there was one really good case one put onto the DI, but it does not happen very often. (KM lawyer)

there is couple of reason [to have KM lawyer] we had a senior lawyer who did a lot of KM contribution to the division on to the Intranet like coordinated what would be onto intranet as part of her normal role as a lawyer but she most come back to work part time and have non client serving role for few years. ... she [upcoming KM lawyer] would be responsible for consolidating particular advice work that we have

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produced and making sure of push onto the intranet in orderly way and updating it because the key problem with all of this is being up-to-date.

I managed the DI, ... I essentiality filter the information that come to me or cross the division and then decide whether it is good idea to be posted to the DI, that is probably 70% of what I do in terms of DI the other 30% is just people asking the thing to be posted or so I just facilitate the posting. (KM lawyer)

Responsibility to improve or facilitate knowledge sharing and reuse] ... it's up to mix of people including the partners can make a huge difference in making the decisions to make time spend on knowledge allocation and like forms part of our budget, you know that could have a big impact, but really comes down to each and every one of us being responsible ... about importance of sharing information.

Appendix E.45: The Central HI's relationship with units

the KM team is charged with responsibility for figuring out the best methods that are available to the firm whether it be developing new electronic databases whether it be in recommending that the firm subscribe to existing services, ..., they have got the role of trying to encourage good practices in those groups. ... the KM team role is to encourage those habits I think.

[KM roles in facilitating knowledge reuse and sharing should be] probably to understand the issues around or difficulties around knowledge sharing and contributing at the practical level at the team level and trying to resolve those to come up with the best solutions from the firm perspectives. I don't know whether they can actively facilitate knowledge sharing on a day to day perspectives that is the big ask for them to doing that, what they can do is make sure that the infrastructure is in place to allow that happen.

I think it is needs to be KM in training and perhaps simplifying the process because it seems innately complex.

Some of our relationship is very casual, some can be one or one and others can be access to practice group meetings so some groups have practice group meetings and then we can go visit and talk to them about an issue. ...if they don't have their own meetings sometimes just inviting people to sessions but that can be quite difficult to get attendance.

Appendix E.46: The existence and collaboration of both types of HI

[the way that lawyers inside of practice groups can improve knowledge sharing and reuse is] I think by demonstrating good examples demonstrating time when it is been helpful and achieved the better result, and also probably by developing more collaborative relationships with the KM division.

(Researcher: what should be KM lawyers relationship with KM team?)I think they should form a part of the committee, definitely.

Appendix E.47: The Central HI relationship with knowledge workers

I think that the role [of KM team to improve knowledge sharing and reuse] should be you attend the practice group meeting and you listen and you aware what
transactions the team is currently running and you become well-aware in the kinds of the information that flow through those particular transactions and you can be able to see what is useful for further reuse later on.

I would see him [KM manager] occasionally because he would come to the meeting of practice group....

Some of our relationship is very casual, some can be one on one and others can be access to practice group meetings so some groups have practice group meetings and then we can go visit and talk to them about an issue. ...if they don't have their own meetings sometimes just inviting people to sessions but that can be quite difficult to get attendance.

There be a lawyer whose responsibility is to make sure that they collect KM information and distributed within the team and work with that person.

Appendix E.48: Coordination with managers or partners

[the KM team should first convince the partners] yes they triangle [laughing] lawyers, KM, partners, collaboration of them. [increase the awareness of partners] and develop some sort of incentive, first of all they had to convince the partners that it is critical to our efficiency to be file sharing and knowledge sharing and then the partner have to develop incentives for the lawyers.

I think there is a disconnect between our people might not know how to do it but they never think to do it or never considered this piece of work would be useful to anyone or if it is good enough to go up there .... to facilitate that things I think need to come both from KM in terms of training but also practice head, partners in practice group have to keep encouraging the junior staff and junior staff to do that. In [office X] there is a partner there who established the wiki website, the wiki database and he is constantly pushing it but it is not receiving a wider encouragement from other partners so I think it is twofold needs to be KM in training and perhaps simplifying the process because it seems innately complex.

Appendix E.49: Coordinating the facilitation roles with other parties

I think maybe a lot of groups develop information about the clients and some of them share that by industry sites and client pages and some of them share by business marketing team, business development team but some don't and you know everyone was contributing to the picture of client that would be a better result. ...so communicating with marketing team and with the lawyers and probably communicating with the business researcher as well.

Appendix E.50: Provide communication and social networking technology

... we actually run a couple of new project we use wikis at the moment for two divisions ... and a wiki is kind of wikipedia and what it is, is we have different topic areas pertaining to that division and people also at the division can easily write in on the wiki page what they know about that particular topic.

...we actually create wikis and we provide advice for them and we set up for them. another thing that we do is provide advice on how they communicate with their
clients and I think that is where, I mean both of them are high value but I think the most tangible part of that is when we provide advice on how to deal with the client because what we do is enhance the relationship they have with their clients. We make working and communicating with that client a lot easier and often that translates in to being able to do more work for them and being feed as better service provide’. ... through one particular tool we have an online collaboration tool [e-room] which we did not create, we actually purchased it, and we managed it on behalf of the clients and the firm and it is to share information regarding contracts and advices and things like that. ...we help support the flow of information through the e-room

### Appendix E.51: Run and maintain the KMSs and KM tools

the KDB has expanded a lot more, you know it continues to grow..., but just firm grows in size and numbers so has that database, same with precedents we getting a lot more areas now ... the Intranets are constantly developing part, they constantly updated they constantly being add to so it is the best where the time it is, that is best that can be.

for some reason we drop the connection ..., I feel quite useless without it, so my main concern is for some reason it is not accessible, when they doing maintenance or ...

if they disconnect each other the firm will have a big trouble in a KM because most of the KMSs is support by some IT system

KM team do very easy HTML coding.... they can do themselves their IT work [part of that]. ...I was a lot with KM guys helping them with KDB and getting data up to it,

### Appendix E.52: Improve better usage of technology by user involvement

we look at how people would use that technology, what sort of behaviors and cultures it would encourage, and whether it suit like information sharing principle like whether it would cut down the amount of duplications double handling all those sort of bad things, whether help us to move towards, yae, better use and sharing of knowledge.

[KMSs] have been constantly improved, before searches was quite limited and you had to be very specific what you are searching for, now ... a lot of folders and advance searches and things like that [is available]

[we get feedback] ... for example, when we design our navigation we look at the usage and also survey [navigation is] sort of we asked about whether they understood terms, it is quite informal, it is just you know if I say this Q what does it mean that sort of the things, ...,so if I name something to you do you know what that is, what to expect when you click on it, so sort of usability of staff.

... I mean if people ask for a project to change I might suggest way that doing it which us response to what they ask to do within the bond of what is feasible with the technology.

... yes so technology installed the share point platform on some trial service and KM help developed some basic sort of prove of concept tools like a Wiki and then
pilot this, so we worked with technology so the technology were sort of customizing for us in our request sort of to the brief that we put that.

<table>
<thead>
<tr>
<th>Appendix E.53: Interviewees’ concern about making contribution to KMSs easy</th>
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<tbody>
<tr>
<td>...the technology is real put off (product?) it is very old technology it is like old library software that people use to use which is real turn off for new people trying to learn how to use it, so I think that is the disincentive for contribution....</td>
</tr>
<tr>
<td>...and a lots of the time I think when it seems too hard people just don't do, it needs to be easy for them, it needs to be seen easy, the perception if to be that they can do it quickly and easily.</td>
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<tr>
<td>... I have forgotten how to do it, so complex, not enough knowledge ... so if there is a simplified process and there was advertising of how to do it I think it will be much more beneficial.</td>
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<tr>
<td>[As a problem of knowledge sharing] databases are not easy to use, you know we have gone to this wiki for a lot of staff in this group then a lot of people find hard to know how to actually use the wiki so they don't.</td>
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<tr>
<td>...a lot of the time it is I just think they're scared of technology and also the technology can be quiet cumbersome.</td>
</tr>
<tr>
<td>I think the main problem that I see with the contribution are that it is very difficult to contribute currently ... difficult in terms of their training required and they have to learn how to do something new, all the platforms are different and it is very technical.</td>
</tr>
<tr>
<td>we make sure to the team look at any repetitive processes they might have sometime we can say we might help them build like transaction map or something like that to help them make the knowledge sharing more transparent.</td>
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<tr>
<th>Appendix E.54: Improve knowledge presentation in KMSs technically</th>
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<tbody>
<tr>
<td>Occasionally for KDB, we will go through and sit there if some document’s link is still working, some document just no longer relevant we will point out to group of.)</td>
</tr>
<tr>
<td>I think[categorize] might be done on KDB, who ever write the article categorize it, so it will be put on the Intranet with those category,...[so] once put on the KDB or precedent, that is easy to find.</td>
</tr>
<tr>
<td>..., the only things that I ever go to them[KM team] would be if want to expand for instance the list of keywords, I have to give any additional keywords that I want to added to them because only they have access to do that kind of things.</td>
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<tr>
<th>Appendix E.55: Integration of KMSs into simple, single or few platforms</th>
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<tr>
<td>that is because things can seem quite disparate so you got the precedent and you got this now and so many different access points, but if is all consolidated into a big say file sharing or whatever and then under that precedent divide per practice group that would be ideal.</td>
</tr>
<tr>
<td>I think the technology can be improved I think that we have to stop to giving people 20 different things to learn, I think that if they had one in a perfect well maybe two different ways of doing things and we start having to have any technical knowledge</td>
</tr>
</tbody>
</table>
that would make lots easier to improve contribution.

[One of the way to improve knowledge sharing and reuse is] having database integrated [to] be searched quite easily, but I think still feel that major issue is cultural.

I think part of the problem is that when people have new technologies like a wiki it just one more things for them to learn and one of the problem that I see here is that we have too many different platforms too many different purposes for different things and people get look at exhausted haven’t to learn everything.

[one of the technologies that we have plan to have is] share point platform, that is Microsoft platform so it is like, you how you can run Microsoft Office on top of that all you work can go through a platform called SharePoint, it is like a portal system, ... now lawyers using only in pilot form. ... the things like Intranet all move to that platform rather than exist separately which all mean that we can more easily tie the content like we can more easily repurpose content to go both to our Intranets and to other places so can go directly to people work flow also thing like wiki for sit side by side with that also there is ability to have sort of discussion board and whatever which I don’t think all used very heavily yet.

Appendix E.56: Improve search facility

... they have been constantly improved, before searches was quite limited and you had to be very specific what you are searching for, now ... a lot folders and advance searches and things like that.

the systems could be improved slightly probably, some sort of easier way of searching server, you can do one search instead of having the search databases individually, so you have one search that could search cross everything and give you a list of both KDB documents and precedent and Intranet material all in one topics that kind of things that would be very nice.

maybe search engine technology is always improving and that is some things that we are trying to improve now .... in future there will be expectation that search will be searched also the external subscriptions which doesn’t happen only one place yet, you cannot search them there are all separate.

Tuning the search engine: for example, implementing better search engine technologies and spending the time to tunes those search engine so that sort of things, developing an understanding of the language that the lawyers use and developing synonym list and things like that, developing best beds like best result through the particular search query, to common search queries that sort of things.

Integration of the KMSs:... Well at the moment we can search all of the databases with the one search engine so that's okay but they do have different individual search engine as well if you want to use them that we do, we have sort of fix that problem a lot, .... In an ideal I think you should have quick search and advance search among.

Appendix E.57: Train users application of KMSs and KM tools

I think it [the role of KM] is twofold ... training and perhaps simplifying the process because it seems innately complex.

The problem with KDB is, the contribution requires significant training and set up
**Appendix E.58: Advertising and informing about the KMSs and IT tools**

I would see him occasionally because he would come to the meeting of practice group in for example, to present new knowledge tools that the firm has developed generally or which is purchase generally or access to a new databases or some such things.

no, the reason that I don’t use it, is I really don’t know what is in it… busy … in a sort of situation, you know, we have got budget we have got deadline for clients or … we don’t have a lot of time to kind of browse and work out and say yes thinks out there, sometimes if you get training on something it might be useful but only time you really learn about this tools is when you actually have need to use them, so with precedent for example, I am familiar more or less because from time to time I use it, KDB I am not so sure.

[one of our role as KM team is] advertise that product by way of publication go that internally, if it is new …. Friday update, so we advertise on those line, if it is a big product we need to make them aware of we also email that to professional staff at the firm.

**Appendix E.59: The helpdesk services**

There is national online telephone helpdesk, lawyers call and they answer or one of the librarians helps them.

Like difficulty to use the KDB, …we [KM team] have a team of people who rostered on to answer all of the different questions so at any one time we might dealing with different questions in different times. we as KM team provide services to lawyers that I outlined, we provide research and alerting services and business research and just general reference support training for range it is the way it is set up that it goes to the people who are best able to answer that the day.
my relationship [KM member] with lawyers is that every now and again I take enquiries so if people looking for certain bit of intranet information or KDB information or help with the Wiki then I am one of many people that might fill some of those calls.

we have different role depending on our background ... and there is two or three, three different help area they can go to, they can go precedent they can go to technically which is the Intranet and support around the provision of the information and they can go to library team for information so there is 3 different function that operate on our helpdesk function, and some of these groups are belong to more that one of those group.

Appendix E.60: Technology is not the main issue

Can the process of knowledge sharing and reuse be improved? yea certainly thing can be improved, how, is a very difficult question, I think my own view is that technology is not the necessarily the answer.

(Could better technology systems improve knowledge sharing and reuse? How) I think the technology is out there just the way you utilize it, how you categorize things and how you set up the search engine, the data put up in.
Appendices F: Further evidences from data about the intermediaries for high- and low-value knowledge including 17 Appendices (from F.1 to F.17) - supplement to chapter 7

Appendix F.1: Interviewee’s perceptions or definitions about high- and low-value knowledge which are mostly extracted from the interviews

<table>
<thead>
<tr>
<th><strong>High-value knowledge is knowledge (or anything) that is:</strong></th>
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<tbody>
<tr>
<td>effective and enables or empower to solve a problem or carry at a task or understand the issues</td>
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<tr>
<td>current, used daily, reliable, and without fault (such as precedent)</td>
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<tr>
<td>relevant to practice group work, tailored precisely to users’ needs, constantly reviewed, have notes and background. (such as precedent)</td>
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<tr>
<td>able to be turned into fees, to commercial value; things that help to maintain a positive relationship with clients</td>
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<tr>
<td>helping do job more effectively and happily</td>
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<tr>
<td>quite detailed information or analysis or interpretation of cases legislations or contracts agreements and ... which is not necessarily through a court but colleagues opinions</td>
</tr>
<tr>
<td>relevant to users practice of law, such as changes in law or in market</td>
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<tr>
<td>the information that users need very little massaging or packing that use virtually as it received</td>
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<tr>
<td>increasing the firm’s productivity in terms of money, volume and efficiency of work and also easy to communicate across the different segment of the business</td>
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<tr>
<td>more about finding a solution to a particular clients problem quite quickly</td>
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<tr>
<td>letting users expand and work with that practice to high level (such as industry knowledge current awareness at legal issues)</td>
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<tr>
<td>saving time, it is unique, it is a very written origin (such as how to make certain type of application in the certain jurisdiction)</td>
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<tr>
<td>such as current affairs awareness, up-to-date legislations and comprehensive case law, commentary on case law</td>
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<tr>
<td>such as specialized legal or technical knowledge about the law, that is the work we are paid to do that is the work that client come to us for (such as experience and specialized knowledge of spurious)</td>
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<td>knowledge that come from clients</td>
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<tr>
<th><strong>Low-value knowledge is:</strong></th>
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<tbody>
<tr>
<td>tangible part of knowledge without context</td>
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<tr>
<td>material that are in KMSs without quality control (such as KDB)</td>
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<tr>
<td>everything else that does not either help to enjoy work or serve clients in terms of commercial point of view</td>
</tr>
<tr>
<td>things which are easily obtained, and information which is very general not detailed in nature</td>
</tr>
<tr>
<td>non relevant things that are probably of interest but not directly related to users practice</td>
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<tr>
<td>knowledge would not be transacted such as probably email</td>
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<tr>
<td>process driven or administrative work, such as where user finds a form</td>
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344
things that just facilitate users getting the job done (administrative or standard operating procedures)
something that you can get from anywhere else, materials that are not very current or they are old
information about other practice areas

Appendix F.2: Shared knowledge is usually high value

I would have rated all of that very little [so I share very little low-value knowledge] because simply from point of view of time there not much point in contributing low-value knowledge.

... well low-value knowledge I have would thought is just by default, just would not be transacted I mean probably email or something like that but that is transacted just to communicate with people but perhaps my understanding of the lawyers that their time is valuable so the focus is anything that is considered low value get very little airplay.

[I share not at all low-value knowledge to KDB] because it is not so useful.

Appendix F.3: The preference of sharing directly with people such as their colleagues and superiors rather than KMSs

I think they prefer to share directly with people, because it is being shared with less people I think it is seen as currency, knowledge is power, so it helps to build a relationship that sort of things. ... sharing to the public I don't think would necessarily convince everyone, the bad is always is a good thing and that is good thing in its own right, ....

[I share very much of our high-value knowledge directly with my colleagues], through talking to them, ...often would be just wandering in someone's office but also we do have weekly or fortnightly group meeting.

(to share high-value knowledge) I think lawyers is more than likely going to be their superiors or colleagues

(more with people not database) yes that is right with me, I see the those database issue and also people issue database in terms of KDB or DI or precedent but the people perspective I see the Learning Seminars and team meeting is being very important.

(what is your idea about a proposition that people share directly high-value knowledge but low-value knowledge through KMSs) I think it is an observation that is probably very good one I mean reducing knowledge down something to put in databases as actually quite time intense, and also as perceived as being low value whereas a few sharing at directly as story telling about something worked on or as an input into a product that was selling to our clients that is perceived as much more valuable. So I think in terms of share high-value knowledge with superiors, colleagues here and in other branches I tend to do that much or very much area.

(Currently I share more high-value knowledge with) fee earning colleagues, superiors and colleagues in here and other places those who working on files, ... I am working with them on a matter. ... the context which I would share high-value knowledge would be working together on a project for clients.

(I share high-value knowledge) usually through some sort of interpersonal means,
Appendix F.5 Comparison of high-value knowledge that knowledge workers get from or share with people and KMSs (just lawyers’ idea)

<table>
<thead>
<tr>
<th>Get from KMSs</th>
<th>Contribute to KMSs</th>
<th>Get from people</th>
<th>Share with people</th>
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<td>4.8</td>
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Appendix F.6: Learning seminars and meetings are appropriate way of sharing high-value knowledge.

We do a seminars every months so we do a national seminar which is the rule out of same material and we do our own internal seminar to our internal clients, ...I prepare a lot of research for those seminars but I don’t present [yet,] (but you share in that way?) yea absolutely, so it is good one [for high-value knowledge].

We do a lot of continuing legal education the seminars which are organized through business development and we go to those and so sometimes ANU professors will come in give us an hour on a particular area of law and that is high value.

[the way lawyers get knowledge from superiors] in most cases it is generally while you are working on a transaction, in other cases can be a facilitated meeting, so for example, we have team meetings and various issues will be discuss in team meeting in other scenario it might be that we have Learning Seminars where senior staff discuss particular issues so there are various ways so there is formal and informal ways. ...

There is monthly team meeting and there is weekly Learning Seminars which everything legal educations L & D options. ... we run them on national basis so if the speaker who is in Sydney we will have video link up with our team in Melbourne and...

(to share high-value knowledge) I think lawyers is more than likely going to be their superiors or colleagues (more with people not database) yes that is right with me, I see the those database issue and also people issue database in terms of KDB or DI or precedent but the people perspective I see the Learning Seminars and team meeting is
being very important.

[the way lawyers share their high-value knowledge is] either informally by discussions and by providing examples of documents, to share a bit by having fortnightly education meeting where they sit around and talk about what people doing or maybe they get someone to give a little talk about something that worked on, that is more formal.

...that facilitate us having meetings and get more effectively stuff like that, is probably more valuable in terms of sharing high value.

[I get many high-value knowledge from my colleagues] face to face, in this office at the moment we also have like face to face discussion session, ... fortnightly meeting.

[about high-value knowledge sharing] I mean they seem to participate quite happily and actively in the cycle of meetings that we have which is a sort of person-to-person formalized sharing arrangement, and I'm sure there is informal sharing that goes on as well.

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<th>Appendix F.7: Group meeting for both high- and low-value knowledge</th>
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| [the way we get high-value knowledge from superiors] in most cases it is generally while you are working on a transaction in other cases can be facilitated meeting, so for example, we have team meetings and various issues will be discuss in team meeting in other scenario it might be that we have Learning Seminar. ... I see the Learning Seminars and team meetings are being very important. I think the only opportunity they really have is one they working directly on a transaction with a partner or superiors and then have team meetings. every Monday morning we meet just for a 15 minute and we talked about, we give a quick snapshot on who is working on what, it's very light hearted It is very informal discussion, we literally don't have the room to all sit down and that will include the secretaries so we will meet in a particular quiet room on the Monday morning so who or a partner wants to tell us what's been up to, that is, you know, ... in terms of people have a bit Monday ices but that is also you don't really get the full information there and then but you know for instance colleague X has been working on a particular application or a particular result was achieved on this file so while that information may see any this goes back to my point that I made at the beginning it is very difficult to distinguish or I don't see any distinction between low and high value because ok so I know colleague X is just one particular application in a particular court that is no significance to me at that moment but later down the track I might come across a similar theme, is go well, I remember then I will go and speak with that person, so I think that I think information is best shared using different media and the informal meetings, you know, to my mind currently regarded as low value simply because that is a snapshot or you don't get full information because they can become incredible important at some point later down the track and also provide that face-to-face of what the colleagues working on.

[about regular group meetings] I am not sure that is high-value knowledge but we share knowledge just giving a daily, weekly update on what people doing and that is happen every Monday – (Researcher: so probably in seminars more high-value knowledge shared than the group meeting) that is right, the group meeting are about administrative day to day capacity.
Appendix F.8: Local HI and high-value knowledge

...I’m skeptical about the value of databases of so or so forth, but a tool that facilitates us having meetings and get more effectively stuff like that, is probably more valuable in terms of sharing high value.

facilitate precedent drafting meeting:
... drafting group [updating and making precedents] do, this the precedent drafting group, we create the precedent in those group and I (a Local HI) go through them to standardize for language and so on....

Appendix F.9: Knowledge holders may not contribute high-value knowledge to KMSs

(to share high-value knowledge) I think lawyers is more than likely going to be their superiors or colleagues, (more with people not database) yes that is right with me, I see the those database issue and also people issue database in terms of KDB or DI or precedent but the people perspective I see the Learning Seminars and team meeting is being very important.

(I share high-value knowledge) usually through some sort of interpersonal means, face to face or over the telephone or by email but those kind of thing.

[the role of IT, KMSs in sharing high-value knowledge is] to the extent that we have to use IT to upload or download information, [but with people] it is normally direct.

Appendix: F.10: KMSs or IT tools as source of high-value knowledge

I see it [preference to share directly of contribute KMSs] is very much depend on the individuals but you know the good people do the both. .....Look I really don't know I mean they seem to participate quite happily and actively in the cycle of meetings that we have which is a sort of person-to-person formalized sharing arrangement, and I'm sure there is informal sharing that goes on as well, I mean it is hard because we spend a bit of time trying put in place systems to make sure people do put things into databases and so on, ...whether it is something they are doing because of the system in place hard to me say.

DI
[Currently, lawyers get the most high-value knowledge from] I would say the divisional Intranet (and the second after that?) I would say our internal computer server, [it is] any documents any lawyers in our organization produces will be stored on a central database, (the document management system?) Yes in fact that would be the number one then divisional Intranet.

It (DI) is automatically their homepage when they go the browser and also we know about the statistic we get used the statistic that they use the links to all their research the highly from the divisional Intranet. (What do you mean by research?) The access our subscription resources the legal research via the divisional Intranet and that is high-value knowledge (you mean LexisNexis?) No not just things that goes off on the Web but also things that our research librarians and business resource librarians put together which they publish on the Intranet ... So
you have got things like industry newsletters and topic specific updates newsletters.

(Researcher: In your idea how do lawyers find and receive high-value knowledge?)
they go to the precedent database and go to the divisional Intranet, (about the
colleagues?) to certain extent just walk around and ask people as well and.
(Researcher: What else is high-value knowledge?) I suppose a lot of the material on
the Intranet is pretty high value, people be lost for that quite bit of that, that is quite
valuable, I don’t know how much value to attach to the putting up of current legal
news and things.

**KDB**

I would not call knowledge in KDB low-value knowledge, ... so most of them are
high-value knowledge.

(Researcher: Does any person, information technology (IT, KMSs) or other medium
play a role in the process of finding and receiving your high-value knowledge?)
certainly IT does in terms of all of the search engines all of KDB and precedent
databases obviously are electronic and certainly like availably, I mean the KDB for
example, everything hyperlink to, legislation hyperlink to external sources, cases
hyperlink to external sources.

(technology for high-value knowledge):
Yes, let’s say for examples when the lawyers are in the court and need a lot of high-
value knowledge and then quite timely fashion, the research staff would do a bit of
sort of very quick research but also the delivery system required IT to someone
facilitate getting that knowledge to them on their Blackberry for example, (you mean
sending them by e-mail or something like that?) Yes you know format that is
compatible to the Blackberry And making sure that all that things set up to keep
working.

**Public internet (web), news, subscription as source of high-value knowledge**

(Researcher: how much high-value knowledge you find from the public Internet
there?) A lot I say very much, (Researcher: what kind of knowledge is there?)
Commission websites, court websites which have judgments on them so case law
research also general research into aspects of our matters, so yes Google comes in
handy [laughing].

I get very much [from internet], yes, if I did not have Google I don’t think I will be
able to be a lawyer [laughing]. .... you get all sort of stuff like publication about the
law firms,... the internet captures so many other resources that just are not captured
in day to day stuff in our internal websites.

(Researcher: do you think that they get high-value knowledge from public internet?
they use it or not?) oh sure yea I mean a lot of, well, not only public internet but
subscription services particularly you know things like where messages are sent from
time to time and you kept up-to-date in that way.

**Appendix F.11: Finding high-value knowledge from KMSs depend, they are not
comprehensive**

[getting the amount of high-value knowledge from KDB] depends, I give you an
example why they depend, because if I have for example, a problem with a client who
had a lease and that lease problem involve something quite specific and go into KDB
it could be a paper written exactly on that problem then I would say it is invaluable
[laughing] and it is always when you get a new matter and you need to do some research on legal issue. I always use KDB, generally I say much.

**Appendix F.12: IT-based KM tools intermediary for high-value knowledge**

Look there is a couple of divisions that have developing Wikis, it is probably they think of there as a way of sharing [high value] knowledge.

(How do you find and receive high-value knowledge?) for example, I receive emails from people, (so technology facilitate?) yes I guess, technology tools that get high-value knowledge to me yes the internet, emails through the firm emails systems, and email systems is not just somebody send me email and say hi, but also the processes that the firm has in place such as news alert, or update some various thing. again I think the most valuable technologies in terms of other ones help us share knowledge among the team, and the firm as whole, I skeptical about the value of DBs of so or so forth, but a tools that facilitate us having a meeting and get more effectively stuff like that, is probably more valuable in terms of sharing high value.

**Appendix F.13: The precedent database as a source of high-value knowledge**

[we get very much high-value knowledge from Precedent Database, because] it is generally because our transaction practices is document based and so we would need to spend a lot of time preparing documentation, we have adopted a policy that we also include some know-how within the precedent so is not just a precedent but it some sort of explanation about the law around using it and various option about using it, that is just very useful.

I would say much [I get high-value knowledge from precedent database, because] we required to fill out a lot of court forms.

[lawyers get very much high-value knowledge from precedent database] Because actually they use that a lot and have to kind of use it part of the process.

I think [lawyers] get much [high-value knowledge from precedent database] as well, precedent are far more active than KDB and there is a big push to use precedent because lawyers have to use the precedent however I don't know whether I would classify all the precedent as all high-value knowledge I would not call low-value knowledge I just think it is more process driven things so maybe I take it as granted I am not sure but it is one of those things I think it is more part of work flow in process rather than a kind of tacit valuable knowledge that people find hard to get.

(rate very much high-value knowledge get from Precedents database and in the reason for why says) Because I use that almost every day.

(any technology that facilitate for high-value knowledge finding receiving?) not so much no.

**Appendix F.14: Getting information from KMSs rather high-value knowledge**

(I get very much 'to great deal high-value knowledge from divisional Intranet, because) We have got what I think it is very sophisticated Intranet and we have like many links to person (personnel) website and our information so it is just open up,
my homepage is our internal Intranet ...and so for instance in that first page I can do all in my administrative stuff in terms of booking my..., putting request annual leave, finding the contact details of my colleagues across Australia but I can also access the KDB the different court websites, all the barristers contact details, so I changed that to a great deal.

**Appendix F.15: The role of Central HI in high-value knowledge**

[I get much high-value knowledge through KM team] (how do KM team provide for you high-value knowledge?) They assist me with research tasks so they assist me in locating resources there are more of server research function particularly with regard to legislation and regulations and things so I’ll ask them to assist me in searching for further research so they themselves do not provide me with the answer of the high value they are more of low value directing into the right area.

[as a intermediary] me [KM lawyer] again, all serve, the KM people all have a role because they maintain the systems, you have IT on their side and always there is the library resources which KM people maintaining and the research that they provide.

Yes they would get a bit [knowledge through KM team] because they have some a couple of good research librarians and I think people do use those people and the general support that given by the KM in putting precedents on and keeping the things running and sometimes with client precedents, you the client changes that they want find a document, well as the KM people who go through all the documents and changes the details and thing like that, so yes they get [high-value knowledge] a bit from them.

I would say, well look at it depend we have one of the function that one of our people do is to video tape presentation and they get put on to the Intranet and I guess if you consider that quite high value, So probably [we, KM team facilitate high-value knowledge] somewhat I guess, hard to say.

I would say somewhat [get high-value knowledge from KM team] only because ...our Intranet is so developed and have got quite amazing resources we don’t really have to rely on individuals but when for instance anything that is not available in our Intranet I find the librarians incredibly useful.

**Email news alert and subscription:**

I have forgotten to tell you about the alert actually this is very important [laughing], ... yes, know-how (KM team) have established and it is very useful, in our alert so LexisNexis daily alert, work place express which is a industrial relations resource online source, know-how has set that up for me and my colleagues so that the we will receive daily update as they come through, know-how also compile news feeds which basically summarize the news from all the major newspapers and I ‘ll send that through, so those type of thing are incredibly important. ... if I want a subscription so daily News feeds I will get that set up with X (a librarian) whether it be legal express case base whatever, but it is an external we have a combination of—that set up an external news feeds, external feeds come through one of this our subscribers but also they sometimes do their owns, so they would be like ooh here is the daily xx or here is that the litigation balhblah and it is all the cases that come out today and I sent them through.

**Help them find knowledge in KMSs, (research)**
[I get very much high-value knowledge from KM team] Very often when we need them to information that they provide us because we usually cannot find it, they can, and that assistance is valuable. ... They find cases for us they find very very important. ... yea, you can do it just through email, you don’t need to speak to them you just email your request and they will write back for you.

Research and KMSs:
(any intermediary in getting high-value knowledge?) other than KM team they probably are the biggest sort of research source of information but I could not really, they would probably be only one, we do a lot of our own research within our group which you do through looking at the law so a lot of that itself that happen through just using the Intranet and various resources available of.

Email alert and research
[I get much high-value knowledge through KM team] They would get sort of updates on a recent sort of changes in the area of laws and also updates on things that are specifically related to their client. ...Yes by weekly e-mail and it is not directed to just one lawyer it is more directed at the practice group. (any other ways that they get knowledge from this people?) Yes they request it we do get a lot of requests to research, so we get specific research requests”.

Research:
(any intermediary in getting high-value knowledge) Yes let’s say for examples when the lawyers are in the court and need a lot of high-value knowledge and then quite timely fashion, the research staff [of KM team] would do a bit of sort of very quick research but also the delivery system required IT to someone facilitate getting that knowledge to them on their Blackberry for example, [sending them by e-mail or something like that] Yes you know format that is compatible to the Blackberry and making sure that all that things set up to keep working.
(any other example?) Yes definitely, when a new case comes up or new clients, we were asked to do an initial lot of business research say for a tender, so one librarian in particular will be assigned to do whole a lot of business research on that means lawyers go to, you know, they attend well-armed with the picture of the industry environment and the challenges they feel the client.

Research and ways of communicate as high value
(Researcher: how about KM team, are they provide high-value knowledge from them?) they are, they provide very specific solution to things so if a lawyer is looking for specific research or case then they can provide that and often that kind of knowledge is very valuable to lawyers obviously when they running their transactions, so I would say that they would probably great deal as well, great deal of firm.
(Researcher: is there any other way that KM team provides high-value knowledge for them?) through the research, I think they provide high-value knowledge through advice regarding communication and collaboration and the reason why I say that is because a lot of the times we create solutions for the lawyers on how to communicate with each other so internal communication but a lot of the time another things that we do is provide advice on how they communicate with that clients and I think that is where, I mean both of them are high-value knowledge but I think the most tangible part of that is when we provide advice on how to deal with the client because what we do is enhance the relationship they have with their
clients we make working and communicating with that client a lot easier and often that translates in to being able to do more work for them and being feed as better service provider.

A KM team member says they provide high-value knowledge for lawyers:
Most knowledge that we [KM team] provide is very high end if we interacting with them that it tends to be quite high-value knowledge (so provide little low value for them).
... the low-value knowledge is not within our scope so sometimes there is low-value knowledge but that KM (KM team) did not look after for example, people own their own Intranets so they just changing their process then while we train them how update their Intranet we won't do it for them.

Appendix F.16: IT as intermediary of low-value knowledge
If you ask me where did I get most of my high-value knowledge I would say from my colleagues and superiors and where did I get most of my low-value knowledge I probably get from databases but I would also get a reasonable low-value knowledge from my colleagues as well.

It [KDB] is very variable in quality and usefulness to people, it is very ad hoc what there is on there, only really what people contribute which may not necessarily be what the next person wants to use, it is a varying ages and it is not reviewed in terms of going out of date, so everyone I put on there has this warning saying this the KM document, you know, no guarantee that is legally correct, no one is really re-seeking it, it is useful only as a repository of information which you can look at but I would hesitate to let to tell people to rely heavily on it, to me it is much less of value.

[lawyers get low-value knowledge from KDB] Somewhat, hang on, KDB incorporate a lot of things, so low-value knowledge would be very general, probably actually much because there are a lot of general things as well.

[I get high-value knowledge from Divisional Intranets] Not so much, very little.

I would say that they probably find very much low-value knowledge on divisional Intranets, now with the division Intranet they find both low value and high value on knowledge in Intranet because so much content on there.

I think my experience has been that by the time I get the opportunity or by the time the knowledge is input into the database is not always current and the search function in the KDB is a bit clumsy so you can take a bit of time to, I might change that to much.

[as a source of low-value knowledge] what comes to mind that our document management system where all of everything that they created is supposed to be saved in this system. (So that is sometimes a source of low-value knowledge for lawyers?) yes sure, very much, I mean every transaction every communication that.

(Currently I find/ receive more low-value knowledge, from) KDB, also sometimes get high-value knowledge as well. [Also I get both high- and low-value knowledge] somewhat from Divisional Intranets.

From which source do they get the least high-value knowledge? I would say the public Internet
-and the second after that? Colleagues in other branches.

(as intermediary in lawyers low-value knowledge sharing) I think they use things like
standard operating procedure databases Intranet, email; and also document management system which is just really low-value knowledge.

I do (use Internet), it tends to be I would say much to very much, but it is less reliable. [I get more low-value knowledge than high-value knowledge] Yes in terms of looking after a particular form of judge mediate if it is attached to the mediator Association I might go to the Google and try to search for a contact details, the internet would be typically be more low value information.

Appendix F.17: Comparison of high- and low-value knowledge in terms of both reusing (getting) knowledge and sharing knowledge in a single chart