



UNIVERSITY OF GOTHENBURG
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**An Evaluation of Information Management Processes at Volvo
Logistics**

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Graduate School

Master of Science in Innovation and Industrial Management

Master Degree Project No. 2012:35

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ABSTRACT

Today, companies face a situation where well-functioning knowledge and information management systems is increasingly important for achieving sustainable competitiveness as core competencies often resides in minds of the employees. Thus, systems enabling knowledge and information sharing play a significant role for successful business operations; this is also the case at Volvo Logistics, the logistics provider of the Volvo group.

This qualitative study, *An Evaluation of Information Management Processes at Volvo Logistics*, focuses on the handling of the most commonly used operational documents at Volvo Logistics and how these should be stored according to operational and legal requirements. Moreover, the research examines the information distribution processes; how knowledge is codified and handling routines are communicated throughout the organization.

The analysis is based upon the process model of information management presented by Chun Wei Choo (2002). In this study especially large focus is put on information organization and storage, information distribution, and document handling as they are important for the Volvo Logistics case.

Keywords: Information Management Process; Document Handling; Information Organization and Storage; Knowledge Management; Information Distribution; Records Management

ACKNOWLEDGMENTS

This research could not have been carried out without the assistance of the many helpful people we have encountered throughout the process. During the semester, we have had the privilege to meet and work with several professional employees at Volvo Logistics and the organization's partners. Moreover, we have also had the privilege to work with a dedicated, talented and very supportive supervisor, Assistant Professor Rick Middel. He has guided us through entire thesis process and always returned with valuable and elaborate feedback. Our supervisor at Volvo Logistics, Christer Halvardsson has also been a highly appreciated and valuable source of guidance and support in leading the process forward.

Finally, we would like to thank all of the people who participated in interviews, providing a large amount of valuable input and without your knowledge, thoughts and attitudes, this thesis would never been written.

Table of Content

Chapter 1: Introduction	1
1.1. Background	1
1.1.1 Purpose and Research questions	2
1.1.2 Delimitations	2
1.1.3 Structure of the Master Thesis	3
Chapter 2: Theoretical Framework	5
2.1: Section 1 - Knowledge, Knowledge Sharing, and the Information Management Process	5
2.1.1 The importance of knowledge	5
2.1.2 Different types of knowledge	6
2.1.3 Personalization and Codification of Knowledge	7
2.1.4 Choice of strategy	8
2.2 The Information Management Process	9
2.2.1 Information Management	9
2.2.2 Information Management according to Choo	10
2.3: Section 2 - Document handling	16
2.3.1 Records Management	16
2.3.2 Recordkeeping Requirements	17
2.4 Theoretical Summary	19
Chapter 3: Methodology	21
3.1 Research Strategies	21
3.2 Semi-structured interviews	22
3.3 Data analysis	23
3.4 Research Approach - document handling	24
3.5 Reliability and validity	24
3.5.1 Reliability	25
3.5.2 Validity	25
Chapter 4: Empirical findings	27
4.1 Section 1 – Information Distribution at Volvo Logistics	27
4.2 Section 2 – Document Handling at Volvo Logistics	32
4.2.1 Current document handling process	34
4.2.2 4 Different types of documents	34
Chapter 5: Analysis	43
5.1.1 Information Distribution at Volvo Logistics today	43

5.1.2 The current Information Products (Information System)	44
5.1.3 How well information distribution is adapted to user needs.....	45
5.1.4 Organizational Structure and differences in Education	45
5.1.5 Summary – Information Distribution.....	46
5.2 Information Organization and Storage.....	46
5.2.1 Document Handling.....	49
5.3 Summary – Document Handling	54
Chapter 6: Conclusions and Recommendations	55
6.1 Conclusions.....	55
6.1.1 What documents are frequently encountered at Volvo Logistics and what is the current process for document handling?.....	55
6.1.2 What factors are important for Volvo Logistics in order to achieve a more coordinated Information Management process?.....	56
6.1.3 How could information and documents be handled and shared in the future?	57
6.1.4 The main research question: How can Volvo Logistics achieve more coordinated document handling and information distribution processes?	58
6.2 Recommendations to Volvo Logistics	59
6.2.1 Recommendations for how to improve Information Distribution at Volvo Logistics – Three approaches.....	59
6.2.2 Recommended approach for improving Information Distribution at Volvo Logistics	61
6.3 Recommendations for Document Handling at Volvo Logistics	64
6.3.1 Short term, medium term, and long term recommendations for Document Handling.....	66
Chapter 7 - Further Research	68
Reference list	69
Articles	69
Books	72
Internet sources	72
Other sources	73
Appendix 1 - Reasons to why the current Information Management System (IMS) does not work	I
Appendix 2 - Mapping of frequently encountered documents and their storage.....	II
Appendix 3 - Original selections from the Swedish accounting legislation.....	V
Original selections from the Swedish customs legislation	VI
Appendix 4 - Different types of agreements.....	VIII

Appendix 5 - Interview Guide	IX
Interview guide (adapted from interview guide DIRKS September 2001): <i>Background</i>	IX
Appendix 6 - Current document handling routine at ReCall	XII
Appendix 7 - Organizational structure before restructuring	XIII
Appendix 8 - Methodology for Design and Implementation of Records Systems from National Archives of Australia and State Records of New South Wales	XV
Appendix 9 - Guidelines for future document handling	XVI

Chapter 1: Introduction

1.1. Background

The present time period has been described as the information age where it is important for organizations to have effective information and knowledge management systems in place in order to achieve competitive advantages from available information and knowledge. These types of systems are essential because the amount of available information that organizations have to process has increased significantly (Soliman and Youssef 2003).

Today, forward-looking companies increasingly see information as a strategic asset that can be used to generate competitive advantage and the appraisal of an organization's information needs and requirements are regarded as very important in ensuring effective business operations (Hussain and Karim 2007)(Lueg 2001). Thus, many organizations are on a regularly basis looking for methods to find and manage information within their environment, and most businesses require effective information management tools in order to be able to assess their strengths and weakness in efficient ways (Karim 2004). Porter and Miller (1985) also agreed that information is one of the most important factors for generating competitive advantages.

This thesis is a two-folded study in which information management and documentation handling processes are examined at Volvo Logistics in Gothenburg. Information management processes are closely interlinked with how knowledge is shared and retrieved in organizations, and thus, this thesis applies theories about knowledge sharing when analyzing the information management processes at Volvo Logistics. Moreover, coordinated information processes are especially important in logistics since it, based on observations from the study, is an information intensive business where several activities needs to be linked together. Today, the company's information and knowledge sharing procedures are characterized by an informal approach. However, due to the nature of the core business, which is characterized by a large fraction of hands-on knowledge and growing information flows, the informal approach has showed to be insufficient. Ownership of information is unclear in the current system. Therefore, it is uncertain who is responsible for updating information in the system, which further enhances the informal methods for knowledge sharing. Thus, more formal approaches for knowledge sharing could be considered as more appropriate in the emerging environment. Throughout the primary data gathering, two areas related to knowledge sharing and information management stood out more than others as being perceived as poorly functioning or with potential for improvements: *how information is organized and stored and how information is distributed today*. Thus, there will be a large focus on these areas further on in this research.

Volvo Logistics, which already due to the nature of the business of logistics, produces and receives large number of documents, is experiencing a growing amount of transport and other types of documentation. In the case of Volvo Logistics, the coordination of

processes between the different functions has not always been done in a coherent way, and this has led to inconsistency in how documents are stored and organized between different parts of the company. Consequently, Volvo Logistics in Gothenburg is in a situation with increasing problems of managing document flows.

Thus, this thesis will examine important factors for information distribution at Volvo Logistics and the existing procedures for document handling at the company. The thesis will also present a guideline for how documents should be stored and organized in the future in accordance with operational and legal demands.

1.1.1 Purpose and Research questions

The thesis will examine which elements are important for efficient information management processes and focus will especially be on questions related to information distribution and information organization and storage. This thesis will map the existing processes for document storing at Volvo Logistics and outline important factors for more coordinated documentation handling processes.

This paper will focus on contracts, transport and accounting documentation which are the most frequently encountered documents at Volvo Logistics. It will also examine how information regarding how to store these types of documents is communicated throughout the organization. In order to do this, the existing procedures and needs for accessing information at the various functions at Volvo Logistics are mapped and compared. In addition to that, laws and regulations for document storage, both for electronic and paper documents, regarding questions like storage time, accessibility, and security are examined.

The main research question that this thesis intends to answer is:

- How can Volvo Logistics achieve more coordinated document handling and information distribution processes?

In order to answer the main research question it is decomposed into the following sub questions:

- 1) What documents are frequently encountered at Volvo Logistics and what is the current process for document handling?
- 2) What factors are important for Volvo Logistics in order to achieve a more coordinated Information Management process?
- 3) How could information and documents be handled and shared in the future?

1.1.2 Delimitations

This project will be limited to mapping documentation, operational requirements, and needs for accessing information for the activities of Volvo logistics in the Gothenburg area.

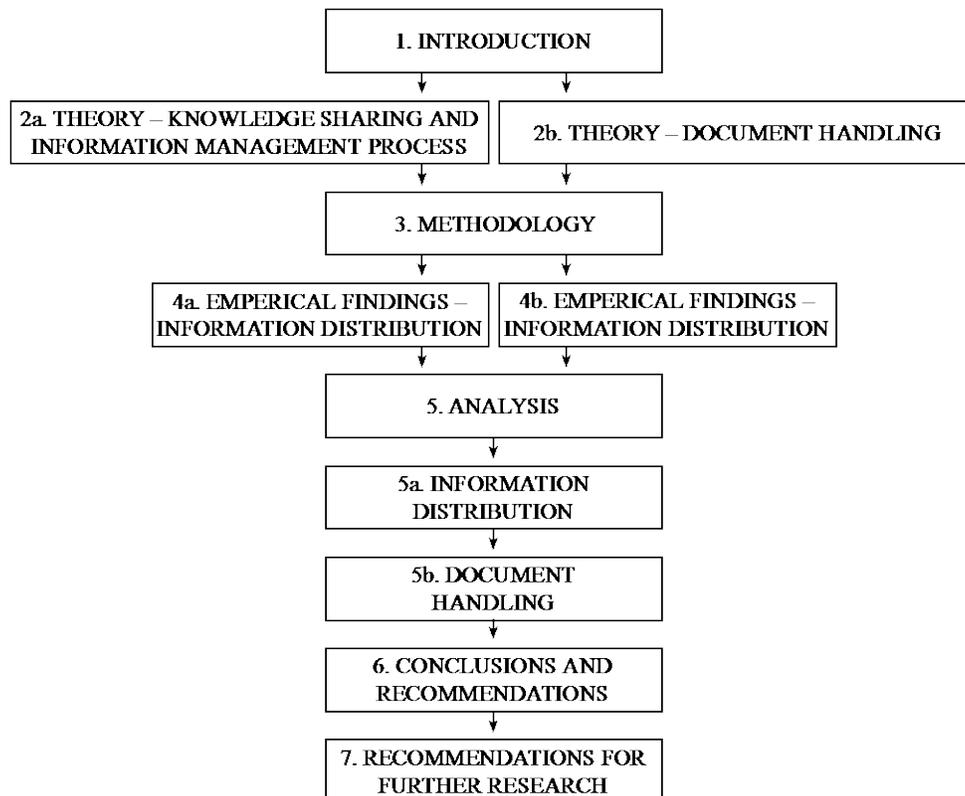
The mapping of laws, regulations, and security questions regarding document storage of

transportation documents will be limited to Swedish conditions. The thesis is limited to looking at document storing and information distribution processes at Volvo Logistics and important factors for creating uniform processes across the units in Gothenburg.

1.1.3 Structure of the Master Thesis

This thesis contains six chapters: introduction, theoretical framework, research methodology, empirical findings, analysis, and discussion and conclusions. It is two-folded since it addresses both document handling and information management processes. This implies that the chapters presenting the theoretical framework, the empirical findings, the analysis, and the conclusions and recommendations all are divided into two sections; one section addressing information management processes and one section addressing document handling. This structure is presented in figure 1.

Figure 1 – Structure of the thesis



In the first chapter, the introduction, a background to the thesis given, the purpose and research questions are introduced, and aims and delimitations of the research are presented. The second chapter presents the theoretical framework of the thesis. This chapter is divided into two sections where the first one introduces theories about knowledge sharing and information management processes while the second section treats theories about document handling. The third chapter gives a description of the research methodology used in the thesis. The fourth chapter provides a summary of the empirical findings of the study, and follows a similar two-folded way as the one used in the chapter presenting the theoretical framework. The fifth chapter is the analysis chapter

which evaluates the findings of the case based on the theoretical framework of the thesis. Also the analysis chapter follows the two-folded structure where one section addresses information management processes and one section document handling. This chapter does also present guidelines for how to store documents in the future based on the theoretical framework and the empirical findings. The sixth chapter, conclusions and recommendations, presents how the findings from this study can be used for answering the research questions of the thesis. This section also presents more practical recommendations for how Volvo Logistics can handle information distribution and document handling in the future. Hence, it is also divided into chapters discussing information distribution and document handling, but it also weaves together these two areas in order to answer the main research question of the thesis. The last chapter of the thesis does also present recommendations for further research within the scope of this research.

Chapter 2: Theoretical Framework

The theoretical framework is divided into two sections. The first section introduces theories about knowledge, knowledge sharing, and an information management process model, presented by Choo (2002), which is used as a key framework in this thesis.

The first section of the theoretical framework begins with a review of literature and theories concerning knowledge and knowledge sharing strategies. This is followed by a presentation of the information management process model and its components. This thesis focuses on information distribution and organization and storage and thus, an emphasis is on these components of the information management process model.

Moreover, organization and storage is closely interlinked with records management theories, thus, this topic and document handling is discussed in more detail in section 2 of the theoretical framework.

2.1: Section 1 - Knowledge, Knowledge Sharing, and the Information Management Process

This section starts by reviewing theories on knowledge and how it has emerged as one of the key features of organizational theory. The section continues by examine the different aspects of knowledge and how it could be managed and transferred between people. The framework presented in section one aims to increase the understanding about the importance of knowledge, how to spread it and its impact on organizational performance. This section also includes a presentation of Choo's (2002) process model of information management.

2.1.1 The importance of knowledge

The modern society of today, often called "information-" or "knowledge society" is characterized by a vast number of highly educated people constantly updated through high-tech computers, smartphones and PDAs. Companies are facing an increased demand to compete on a global scale (McDonough III et al 2001) and their main source of competitive advantage is increasingly resident in the minds of their employees (Grant 1996). This process of change poses a great threat and challenge for every organization as the bargaining power shifts. However, the development also offers great opportunities for those who are able to manage it accurately.

Consequently, knowledge has gained increased interest in organizational theory and strategy. Nonaka (1991) stated that "*in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge.*" (Nonaka 1991, p. 1) The growing attention has turned knowledge into an interdisciplinary subject in itself and is now dealt with in a variety of business strategy literature with thorough descriptions of how it should be managed in order to become an essential asset and source for competitive advantage. (Beveren 2002). This development has increased the need for profound management systems dealing with questions about how to foster and administrate knowledge, and as a result, the field of knowledge management (KM) has arisen. (Halawi, Aronson and McCarthy 2005)

"Knowledge Management has become very popular, particularly as we are in the "information age" and "knowledge era", and much has been written on the topic from

various disciplines, ranging from management, strategy, economics, to computer science.” (Beveren 2002, p. 1) “The general purpose of Knowledge Management is to make knowledge usable for more than one individual, e.g. for an organization as a whole; that is, to share it.” (Kuczajka 2001 p. 1) However, the process of sharing knowledge is complex and heavily dependent on the type of knowledge that is to be shared.

2.1.2 Different types of knowledge

It has been argued that knowledge can be seen as either context-dependent or context-independent. Prominent authors have argued that organizations generate and use organizational routines to manage daily activities, but that these routines are context-dependent and thus not transferable. However, in the case of this paper, the knowledge (how to store documents) is universal and the same routines are applicable to all of the different organizational functions, previous research has referred to this type of knowledge as procedural. Moreover, knowledge that is procedural by nature can be assumed to be context-independent, easy to communicate in text, and consequently easily transferable between a corporation’s units. Alavi and Leidner (2001) argued that several types of knowledge exist e.g. procedural, causal, declarative, relational, all of them are presented summary seen below:

Knowledge Taxonomies and Examples - adapted from Alavi and Leidner (2001)

Knowledge Types	Definitions	Examples
Tacit a) Cognitive tacit b) Technical tacit	Knowledge is rooted in actions, experience, and involvement in specific context a) Mental models b) Know-how applicable to specific work	Best means of dealing with specific customer a) Individual belief on cause-effect relationship b) Surgery skills
Explicit	Articulated, generalizable knowledge	Knowledge of major customers in a region
Individual	Created by and inherent in the individual	Insights gained from completed project
Social	Created by and inherent in collective actions of a group	Norms for inter-group communication
Declarative	Know-about	What drug is appropriate for an illness
Procedural	Know-how	How to administer a particular drug
Causal	Know-why	Understanding why the drug works
Conditional	Know-when	Understanding when to prescribe the drug

Similar to Alavi and Leidner (2001) Kogut and Zander (1992) identified several types of knowledge and categorized them into two types of knowledge; information, which implies knowing what something means; and know-how (procedural knowledge)¹, a description of knowing how to do something.

For this case, the procedural approach is most important as the paper's aim is to present a guide over documentation handling and describe how it could be communicated to the organization in an efficient manner. Von Hippel (1998) offered a definition "*know-how is the accumulated practical skill or expertise that allows one to do something smoothly and efficiently*" (von Hippel 1988, p.6). Procedural knowledge is useful for descriptions of how best to perform a certain task, for instance, to minimize inventory. Moreover, the procedural knowledge is accompanied by the advantage of being easily remembered as it often can be displayed in modules or figures (Kogut and Zander 1995). The procedural knowledge attempts to identify types of knowledge that are of administrative nature and as with any other knowledge, know-how must be acquired and accumulated (Ungan, 2006).

2.1.3 Personalization and Codification of Knowledge

Haas and Hansen (2007) distinguished between two types of knowledge-sharing mechanisms within a firm, through electronic documents or personal interactions. The aspects are being conceptualized as two distinct ways of transferring knowledge across organization units. The personal integration spreads knowledge through "*direct contact between individuals, when one person advises another about how to complete a specific task*" (Haas and Hansen 2007 p. 3). In the paper "What's your strategy for managing knowledge?" Hansen, Nohria and Tierney (1999) observed the consulting industry and how it seems to use two very different kinds of knowledge sharing strategies. Some organizations tie knowledge closely to the person who developed it and it is mostly shared via direct person-to-person contacts. This approach is called *personalization strategy*. One feature of this person-to-person sharing is that the handover of knowledge requires direct contact between the provider and receiver, either in brainstorming sessions, one-on-one conversations, meetings, videoconferences or by phone. Accordingly, as the sharing involves direct contact, tacit knowledge can be exchanged. In order for a personalization strategy to work, significant investments in network building within the organization are required. A significant focus is put on dialogue between individuals and not as much knowledge is retained in a database (Hansen, Nohria and Tierney 1999).

Some organizations, on the other hand, codify and store knowledge in databases, where it can be easily accessed and used by anyone in the company. This approach is called the *codification strategy*. In this method, knowledge is codified by using a "people-to-documents" approach where the knowledge is extracted from a person and put down on written documents either in paper or electronic format (e.g. Haas and Hansen 2001; Werr and Stjernberg 2003). The document can later be reused for various purposes. This strategy allows many people to search for and retrieve knowledge without having to contact the person who originally kept it. What's more, this way of storing knowledge

¹ Know-how and Procedural knowledge is, from here on, used interchangeably.

opens up the possibility of achieving scale in knowledge reuse and thereby save work and reduces communication costs. This is especially true for large organizations. Easily codified knowledge is most appropriate and suitable when using this method (Winter 1987). An increased emphasis on electronic document sharing has emerged as organizations, to an increasingly large extent, use computerized systems when trying to spread this type of knowledge. The documents are created when “*employees record what they know in writing and upload those documents into databases that can then be accessed by other employees as needed*” (Haas and Hansen 2007, p. 4). One of the trademarks of this document-to-people sharing is the separation of provider and receiver. In this case, the receiver of the document does not have to contact or speak to the provider directly but can use the document as a stand-alone resource.

The codification strategy is given increased attention as many firms of today have seen benefits in routinized behavior, especially when it comes to performance of relatively simple tasks. Routines offer several opportunities for efficiency gains, but only in the case where the routine descriptions are accurate and followed. Nevertheless, obtaining a routinized behavior is not easy, the constant pressure from external and internal stakeholders force actions toward previously learned behavior which has been successful in the past (Kogut and Zander 1995). Often times, individuals perform activities based on their previous experience and knowledge, which can cause problems as they are not used to standardized procedures and may resist standardization (Martinsson 2010). This behavior might lead to that advancements in technology and work processes are foregone and thereby causing an inefficient organizational processes.

The nature of the knowledge determines its potential level of standardization and “documentability” where documentable type of knowledge is easier to standardize and thereby making routine. The term standardization is defined as “*the degree to which work rules, policies, and operating procedures are formalized and followed.*” (Jang and Lee 1998, p.3). When standardization is in place, the organizational processes become routine and come with well-defined tasks (Ungan 2006). One example of easily documented knowledge is the procedural as it often contains administrative instructions, and guidelines (Ungan 2006) (Kogut and Zander 1995).

2.1.4 Choice of strategy

The choice of strategy (codification or personalization) is very much dependent on the tasks at hand, the size of the company, how it operates and the people it hires. A codification management strategy based on reuse fits situations where knowledge and information do not vary much over time and is rather standardized. In situations where the information or knowledge is customized there are benefits from using a personalization strategy. Haas and Hansen (2007) argue that emphasizing the wrong strategy or trying to pursue both at the same time can quickly weaken an organization.

Sometime, similar or even the same problems may be encountered within different divisions. Effective sharing of knowledge across these divisions can reduce organizational costs related to inventing the same solutions twice (Goodman & Darr 1998). Haas and Hansen (2007) distinguished between three performance-related outcomes of knowledge sharing - time savings, work quality, and signal of competence.

Time savings make up for a vital part in a firm's productivity levels and competitive performance.

Moreover, time-consuming tasks involve opportunity costs in the form of time that cannot be spent elsewhere (Hansen, Podolny, and Pfeffer 2001). Thus, fast assignment completion involves quicker results and spinoffs in form of time dividend to spend on other activities. The model presented by Haas and Hansen (2007) reveals that electronic document quality has a significant effect on time savings. The logic behind this reasoning is that electronic documents enhance reuse, which reduces search time, which improves task performance. Haas and Hansen (2007) stated that especially electronic documents of high quality can help teams to save time by allowing them to complete some essential elements of their work more quickly than would have been possible otherwise. On the contrary, a function that has access only to documents of low quality is likely to have to spend valuable time collecting and checking basic background information resulting in significant inefficiencies. Consequently, the higher the quality of the knowledge contained in the electronic documents used by a team, the higher the likelihood that the team can save time by exploiting this knowledge. Moreover, Haas and Hansen (2007) showed that the time savings also have a significant and positive effect on work quality. However, if a large amount of rework and modifications of the electronic documents are required, the benefit in time saving is decreased.

One way of facilitating the upkeep of high quality documents is by establishing a knowledge management system (KMS). One of the aims of such a system is to assist workers in creating, organizing, and obtaining business knowledge whenever and wherever it might be needed. The system should contain process descriptions, procedures, patents reference works, formulas, best practices, forecasts and fixes etc. A striking example of how an efficient KMS can affect business performance is found in a case from BAE systems, which reduced the time needed to retrieve information from its intranet by 90 percent. However, obtaining outstanding results as in the example above is not easy and it takes a lot of time and resources to do so. One key feature in a KMS is the information management system and its accompanied management (Marakas and O'Brien, 2007).

2.2 The Information Management Process

This section will review basic theories on information management and how information could be stored and retrieved in an efficient way and thereby improve information distribution. In this section, a framework illustrating an information management process suggested by Choo (1995, 2002) will be described as it will later provide a foundation for this thesis' analysis of how Volvo Logistics handles its information management system. The framework consists of six parts. However, focus will primarily be put on two of these in the analysis; information organization and storage, and distribution.

2.2.1 Information Management

Information management (IM) is a broad conceptual term that has various meanings and interpretations among different constituencies. Often the term is used interchangeably with others. For instance, information management is often equated with the management

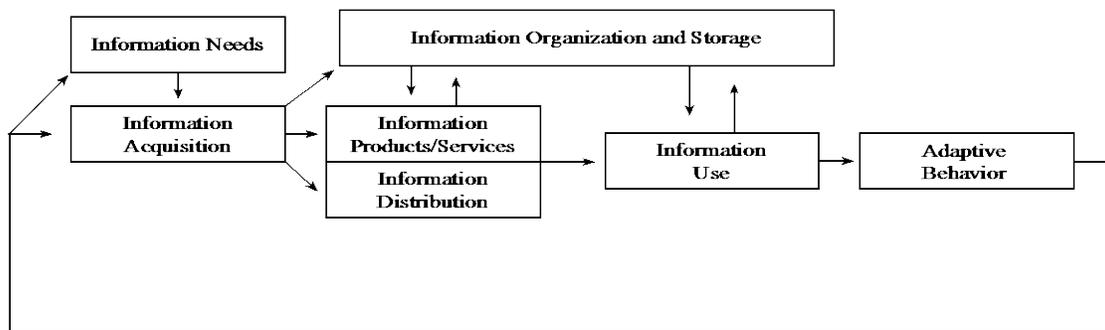
of information resources, the management of information technology (IT), or the management of information policies or standards (Choo 2002). Some suggested that information management draws upon ideas from both librarianship and information science (Maceviciute & Wilson 2002). Choo (2002) described organizational intelligence as organizations capabilities to deal with complexity, i.e. to capture, share, and extract meaning from information. In turn, an organization’s complexity is affected by the number of information sources it requires, the number of business elements and divisions it needs to coordinate, and the relationships linking these factors together (Choo 2002). In this thesis the process model suggested by Choo (1995, 2002) is used as a basis for the analysis as it, in a clear and structured way, combines important aspects for information management and knowledge sharing.

2.2.2 Information Management according to Choo

Chun Wei Choo (1995, 2002) presented a process model of information management (shown in figure 2). In the process model, Choo (2002) illustrated the information management process as a continuous cycle consisting of six interlinked activities supporting and working in parallel with the learning activities of an organization: identifications of information needs; information acquisition; information organization and storage; development of information products and service; information distribution; and information use. The process then restarts at the right-end with adaptive behavior when new information is created by the organization. The system aims to provide the end-users with relevant information. Intelligent organizations gain from having access to varied sources of good quality information. Thus, it is beneficial to be provided with information through various information products and services able to cover different time horizons and different information focuses (Choo 1995).

“Users want information not just to give answers to questions ‘What is happening here?’ but also to lead to solutions for problems ‘What can we do about this?’.” (Choo 2002, p.39)

Figure 2 – The Process Model of Information Management -Adapted from Choo (2002)



2.2.1.1 Information Needs

Choo (2002) described information needs as originating from when organization members seek information about how to make decisions and solve problems in organizational specific situations and experiences encountered in uncertain and volatile environments. Moreover, these situations and experiences are composed by several factors in addition to those related to the subject itself, for example, functional constraints, organizational style, professional norms, degree of risk, amount of control, and so forth (Choo 2002).

Thus, the analysis of information needs must ask more than just “What do you want to know?” but also questions as: “Why do you need to know it?” “What does your problem do look like?” “What do you know already?” “What do you anticipate finding?” “How will this help you?” “How do you need to know it?” and “In what form do you need to know it?” (MacMullin and Taylor 1984).

In addition to this, Choo (1995) explained that the identification of information needs should focus on being representative for the true needs of the users. Choo (2002) emphasized that the true needs of the users must be the basis for a well-functioning information management process. This is especially important today as information is very fluid and constantly created, database content is continually changing, web pages are frequently updated and news comes on a 24-hour basis. The high creation speed of information makes it very important that everything is accurately documented in order for the users to find it when needed. “*An accurate description of information requirements is a prerequisite for effective information management.*” (Choo 2002, p.28)

2.2.1.2 Information Acquisition

Information acquisition is in turn driven by information needs and must be performed in a way that correctly addresses information requirements of the organization. However, information acquisition is a complex function since it has to combine two opposing demands: the wide-ranging diversity of the organization’s information needs and the limitations of human attention and cognitive capacity. There is a need control that information variety is maintained and a powerful way of doing this is to involve as many persons as possible in the information gathering process (Choo 1995). Furthermore, it is important to evaluate the sources of information and to constantly match sources with information needs of the organization, which in turn also has to be constantly re-examined (Choo 2002). When creating information, it is important to make sure that the document contains relevant content and contextual information. This must be done in order to ensure that the transaction in question has been fully and appropriately documented, but also so that the document has value as a source of information to others. (JISC, Information Management)

2.2.1.3 Information Organization and Storage

Historically, the storage of information has been used to streamline paperwork procedures and to reduce the actual cost of information handling. In the efficient organization however, the value is that a well-functioning information storage system makes it easier to find information addressing more specific purposes or problems (Choo 2002). Moreover, effective storage constitutes a vital part in the organizational memory

and enables personnel to go back and look at organizational history and thereby find ways/methods used in the past. Also, the memory stored in a database constitutes a vital source for decision-making.

As previously stated, codified knowledge sharing can be argued to be especially beneficial when a large organization is trying to distribute procedural knowledge and thus, the people-to-document approach should be accompanied by a database that is well-developed (Ungan 2006). One of the key factors in a database is the structure; just imagine how difficult it would be to get any information from a system if the knowledge were stored in an unorganized way, or if there were no efficient way to retrieve it. Consequently, an effective database should contain organized data so that it can be easily accessed, processed, retrieved, managed and updated. One way of obtaining structured databases is to use a database management approach. This method merges and organizes previously separate files from different sources into warehouses that store the data. It is very important that the data has been cleared, transformed, and cataloged so that it can be easily accessed and retrieved by the end user. In short, if a person is to be able to search for and acquire information, the information must have been stored somewhere in some form. The form of the stored information is very important for the personnel's ease of later acquiring the information (Korfhage 1997). It is important to organize and store the acquired information in ways enabling information sharing and retrieval. Using information technology can facilitate this, and today there are a number of methods for structuring data (Choo 2002). *"The volume of data produced and collected need to be given structure in ways that reflects the interests and information-use modes of the organization and its members."* (Choo 2002, p.25)

One way of organizing data is through classification and indexing, this can be regarded as a way of packaging information into easily representable items that is convenient for the users. In order to make the stored data useful, the user must be familiar with the different classifications and understand how what the different categorizations represents and how they relate to each other (Krippendorff 1973). Commonly, information is occasionally not stored at all or stored in uncoordinated ways without any thought of how to make it accessible for future use. Hence, future information and knowledge sharing and learning from lessons learned become very difficult. (Choo 2002). *"The organization must establish an integrated records management and archival policy to enable it to create, preserve, and leverage its corporate memory."* (Choo 2002, p.34). Another important feature of the information storage is that the contained documents often represent an organization's best, and sometimes only, link to the past. Also, large organizations undertake a wide variety of functions and have complex administrative structures leading to difficulties in coordination. (JISC, Information Management). Therefore, it is important to have coordinated information storage. JISC suggested that the created and held information is being managed and maintained in such a way it:

- Meet all internal business needs
- Enable the content of the information to be accessed, used and reused in a controlled and efficient manner
- Is kept and maintained/stored in the most economical way consistent with the

above objectives

- Is disposed of in a way that is auditable, and meets all environmental and other requirements.

(JISC, Information Management, p. 45)

Thus, the information organization and storage constitute an important part in reaching these targets.

Brooks (2007) claimed that organizations of all sizes in all industries have a lot of information that have been saved and stored in several different places and that each day more documents are created and received. Thus, as the volume continues to grow, so do the issues of finding and managing these records. In order to keep the increasing amount of information under control and to prevent the system from being flooded with irrelevant information, a retention schedule needs to be developed. A retention schedule determines the destruction or stable retention of information (Krippendorf 1973) (DeSilva and Vednere 2008d).

The main objective of a retention schedule is to ensure that all information follows a specific and correct path and that future decisions are made according to the determined rules and criteria. Some information might also be permanently retained since it, for instance, contains practices that can be useful for future operations. Consequently, an uncontrolled destruction of information can exercise a significant impact over an organizations performance. Moreover, creating accurate, reliable information, providing access to it and only retaining that worthy of conservation are all parts of the required structure to obtain an information distribution. This is especially true as an increased personnel turn-over results in a decreased possibility to rely on knowledge and experience inherent in individual members of staff. Consequently, a complete information management system is a key-factor for successful business operations (JISC, Information Management).

2.2.1.4 Information Products and Services

The information products and services are closely interlinked to the organization, storage and distribution of knowledge. The products and services can be seen as a helper in sharing stored information. Information products and services should, in order to be meaningful, address matters relevant for solving different types of problems (Choo 1995, 2002). An information system is usually consisting of a combination of people, hardware, software, communication networks, data resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in an organization. Information systems are central components in any successful information management process and must therefore be carefully managed and adapted to an organization's specific needs (Marakas and O'Brien 2007). Thus, it is not enough to have well-structured data in order for an information management system to be efficient. The database has to be accompanied by equally developed hardware and software. These two function as a facilitating link between the data and end user. The search procedure is the central part within the interaction between the user and the catalog (Krippendorf 1973).

Thus, information retrieval devices, such as search engines, must efficiently respond to user requests and making past information available. However, the computerized system cannot do much other than selecting from what is stored, i.e. information that is not represented in the available indices and relationships that do not appear as links cannot be operated upon and are therefore neither searchable nor receivable intentionally. (Krippendorff 1973)

The end-user also plays an important part in the information system. Thus, it is important that the product takes its start-off in the user opinion towards key-features such as application input, processing, output and storage. The users should also get training in how to use applications and programs correctly (Marakas and O'Brien 2007).

2.2.1.5 Information Distribution

Information distribution is important since it is the process for redistributing and sharing information from different sources throughout the group. A well-functioning information distribution process facilitates more active learning in the organization and makes it more likely that information is retrieved from the system, which in turn further increases the possibilities for new learning by linking previously separate information together. The information distribution is highly dependent on the previously discussed features storage and products and services. This is the case since the potential distribution of information is largely affected by how well-functioning the products distributing the information is, which in turn is affected by how well stored the information is. In the process model by Choo (2002), the sharing and distribution of knowledge and information is a prerequisite for perception and interpretation. Moreover, the delivery of information should be implemented in ways adapted to work-procedures and preferences of the end-users, and focus should be on providing them with as good information as possible for performing their work. (Choo 1995, 2002)

The distribution of information is highly dependent on the information intermediaries previously discussed, i.e. the products and services. An intermediary can be seen as independent information processing system carrying out the information acquisition, processing, organizing and distribution based on the end user's information need. In short, the information intermediary can be seen as a system that mediates between the producers and consumers of information (Womac 2002).

Somewhat simplified, it can be argued that before the break-through of electronic databases, information was mainly distributed via relatively stable operations where creators gathered, created, edited and distributed information before the end-user used it. This clear definition made the roles and responsibilities of each party clearly defined and understood. However, with the emergence of computer technology these characteristics changed and the notions of creator and user are not as clearly defined anymore. Information is still demanded by the final consumers but they are now, to an increasing extent, also the creators of information. Thus, questions regarding ownership and responsibilities have become increasingly important when it comes to the distribution of information.

Figure 3 - Creators and Users - Adapted from Flowerdew and Whitehead (1975)

	Ownership before the emergence of databases/computerization	Ownership after the emergence of databases/computerization
Creators	Create, Gather and Edit	Create, Gather, Edit and Use
Users	Use	Create, Gather, Edit and Use

The new structure of creators and users give rise to questions how mechanisms of information distribution should be organized in order to reach an optimal solution. The question is very difficult to answer, mainly as information unlike physical commodities, is very hard to measure and analyze (Flowerdew and Whitehead 1975). Nonetheless, proxies for optimal solutions have been developed; Dertouzos (1997) argued that highly customized information is likely to have little or no value to people other than the intended recipient. However, the more abstract and codified information is, the higher value it has to a larger audience. Thus, holders of the latter kind of information have the ability to achieve large economies of scale if distributing it wisely. Moreover, the distribution cost is nearly independent of the scale, i.e. information can be replicated with a marginal cost close to zero (Womac 2002). Consequently, a large part of the involved costs consist of the time and attention of users and the cost of information distribution can be seen as the opportunity cost of time that could have been used elsewhere plus the cost of distribution. Choo (2002) argued that the opportunity costs should force the information distribution system to provide the end-user with on-time and correct information in suitable formats. However, the end user of today has the option of collecting information from many primary sources; it could be via Internet, a formal request to the originator, a telephone call, a purchase from the publisher, or through other means. Consequently, the intermediary that an organization wants its member to use must provide some added value. *“The value can come in the form of higher-quality information, more complete information, more easy or faster access to information, better organized information, cheaper information, or other factors”*(Womac 2002, p. 5)

The end-user will seek the most easily available and least costly information they can find (MacKie-Mason et. al 1999). As seen, the information intermediary’s design exercises a large impact on the end-users way of retrieving information.

The hardware, administration, database creation and maintenance are fixed costs that will exist whether there are two or two million users. The experiment carried out by MacKie-Mason et. al (1999) showed clearly that the main significant variable operating cost is the service of the user support team who answer questions from individual users. The experiment also shows that there is a substantial learning curve during which users become aware of the service and accustomed to using it.

2.2.1.6 Information Use

This element in the information management process model describes how information may be interpretive process in order to make meaningful and function as a basis for decision-making processes. *“In organizational learning, individuals use information to*

create knowledge, not just in the sense of data and facts but in the form of representations that provide meaning and context for purposive action.” (Choo 2002 p. 45). Thus, there should be flexibility in information representation in the information processes for facilitating that information is used for creating meaning and promoting understanding for how to solve problems (Choo 2002).

2.3: Section 2 - Document handling

The first theory section presents an information management process where one important part is the information organization and storage. This section will elaborate on a key feature within organization and storage; the management of documents and records. In accordance with Choo’s (2002) advices, this thesis uses recommendations from the records management field and the framework in this section stems from national and international standards and recommendations. The standards and recommendations are mainly gathered from ISO (International Organization for Standardization), JISC (Joint Information Systems Committee), ISADG (International Council on Archives) and NARA (National Archives and Records Administration). The framework will later provide the foundation for a suggested way and guidelines of how to store documents at Volvo Logistics where paper and electronic copies are given a significant focus.

2.3.1 Records Management

This part gives an overview of records management recommendations presented in previous research and by different institutions.

A record is, according to ISO 15489-1:2001, defined as: information created, received, and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business (ISO 15489-1:2001, p. 3) The management of these records are, according to title 44, chapter 29, section 2901 in The United States Code (FindLaw 2012), defined as: the planning, controlling, directing, organizing, training, promoting, and other managerial activities involved with respect to records creation, records disposition, records maintenance and use in order to achieve adequate and proper documentation of the policies and transactions of an organization. The International Organization for Standardization (ISO 15489-1:2001) offers a similar definition but adds efficiency as a criteria for sound records management. Moreover, ISO 15489-1 suggested that every information system should contain information about records management processes and the accompanied legal, organizational and technical requirements. General records management processes such as classification, indexing, review, auditing and disposition of records, should be clearly stated. Moreover, all information on how records are captured and retained should be clearly documented (ISO 15489-1; 2001).

Up until recently, records management has been thought of only as the long-term storage. However, this view has been changed and RM is now more focused on the end-to-end management of company records from creation, use and storage to final disposition (DeSilva and Vednere 2008a). Information technology offers a very important opportunity for a more efficient records management but must only be seen as one part of an entire system (DeSilva and Vednere 2008c). Thus, one of the most critical steps is to make the employees use the RM-system correctly and incorporate it into their respective

day-to-day business operations. Thus, RM starts to become successful and efficient when it becomes routine (DeSilva and Vednere 2008b). One suggested way of making this happen is to introduce the concept of business-process-driven records management (BPRM), wherein records are no longer a disconnected from the business process but rather included as an underlying component. Records management thus simply becomes part of the normal business routines and not a special step that is done by a separate group of people using specialized tools (DeSilva & Vednere 2008a).

2.3.1.1 General Records Management characteristics

A lot of people within an organization are usually experts in their specific field respectively, a fact that might bring issues when the specialized culture leads to a too silo-based mentality where everyone has started-off at the same spot but evolved in different directions. The different ways of working can bring problems when it comes to tasks that are cross-functional and not directly linked to the daily operations. Recordkeeping is one example of such a task. The silo-based approach leads to that no-one can see the entire picture and this have to be changed in order to develop the first step of a complete recordkeeping management system (Gregory 2005) (Schwartz 2007). Another way to ensure continuous upkeep of a records management program is to secure top management commitment, clear ownership, and to create a steering committee with representation from the appropriate departments. *"You must have representation from records management, IT, legal, and from one or more business knowledge workers—the actual departments."* (Schwartz 2007, p.1) In order for an organization to continuously meet recordkeeping requirement it will have to merge what is said on paper with reality, i.e. ensure that the company's records management policy is up-to-date. According to Schwartz (2007) anything older than three years old is normally outdated. Once written, retention policies can quickly become out of sync with organizational realities.

Moreover, a common question from employees when it comes to records management is: what is in it for me? Unfortunately, "very little" is the typical answer. Moreover, people are usually rather resistant towards doing an extra amount of required work when there is nothing or very little to gain. Accordingly, technology has been seen as an attractive way of maintaining record keeping without intervening or adding extra work-load into employees' daily operations. Another way of circumventing the issues is to use an incentive program or increase the understanding of the benefits of a profound recordkeeping process (Schwartz, 2007). Thus, people within an organization should receive education in records keeping and management in order for the process to sustain. It is important that all staff members are capable of reading the filing system and allocating file reference numbers to documentation (NARS, 2012).

2.3.2 Recordkeeping Requirements

A somewhat unified view on what tasks and obligations records management has within an organization exists. However, there is no such thing as a "one size fits all" specification for what is required to ensure good records management in every organization. A host of factors, both from within the institution (operational) and from outside it (regulatory, legal) needs to be considered (JISC, Information Management) (ISO 15489-1).

2.3.2.1 Regulatory considerations

All organizations need to identify the regulatory environment that affects their activities and requirements of documenting their activities. The regulatory prerequisites are statements in laws, regulations or agency directives providing both general and specific guidance.

An organization should provide adequate evidence of its compliance with the regulatory environment in the records of its activities. The regulatory environment mainly consists of:

- Statute and case laws, and regulations governing the sector-specific and general business environment including laws and regulation relating to records, archives, access, privacy, evidence, electronic commerce, data protection and information.
- Identifiable expectations of the community about what are acceptable behaviors for the specific sector or organization.

The nature of the organization and the sector in which the organization operates will determine which regulatory elements that is most applicable to that organization's records management requirements (ISO 15489-1; 2001, p. 5).

2.3.2.2 Operational considerations

All created records have a primary purpose and that is why they are created or received. This primary purpose is often referred to as the operational requirement (Brooks 2007). Thus, records act as evidence for an event and must therefore be kept for as long as it has evidential or any other operational value. Decisions concerning the business and accountability questions should involve the unit responsible for the specific business activity (ISO 15489-1; 2001). Moreover, the requirements are dynamic and dependent on the type of created information, its purpose, content and environment. A clear example of how one of these factors, the environment, affects the records management can be found in the diminishing use of "traditional records". This type has traditionally been held on paper, microfilm or microfiche, but are now increasingly outdated and new records are created. The new records are often held in electronic format or within electronic systems. Obviously, such a development plays an important role when it comes to the requirements of records management. (JISC, Information Management)

2.3.2.3 Retention schedule

A commonly used way for an organization to fulfill legal and operational requirement is to establish a retention schedule, mainly since these schedule acts as an organization's safe harbor in case of lawsuits or legal claims (DeSilva & Vednere 2008d). Organizations that have implemented such a schedule can demonstrate good faith efforts when disposing records. The retention schedules of today do not only include paper but also electronic and other media records as well. Thus, anything that is defined (by every unique organization) to be a record, regardless of type, format, or media, should have a matching instructions in the retention schedule. While records retention management sounds reasonably straightforward, it will take most organizations a considerable amount of time to do it right (DeSilva & Vednere 2008c).

2.4 Theoretical Summary

The theoretical framework takes its start-off point in Hansen's, Nohria's, and Tierney's (1999) framework where codification and personalization strategies are discussed as different ways of sharing knowledge. The authors argued that it is beneficial to store easily codified knowledge in databases from where it later can be accessed and used by anyone within the organization and thus enabling scale advantages in knowledge reuse.

Other prominent authors, (Ungan 2006) and Kogut and Zander (1992), argued that procedural knowledge is one type of easily codified knowledge and therefore suitable for distribution via a computerized system. Thus, information management systems theories are of interest. In this thesis, a process model presented by Choo (2002) is used. The model contains six different parts but this project have focused on two; information distribution and information organization and storage, and the since the latter is closely connected to document handling, that area has been elaborated upon as well. In the tables below, general and important characteristics for successful routines of each of the two parts are summarized. These provide the foundation for the framework used in this paper.

General characteristics – Information Distribution	
<u>Characteristics</u>	<u>Benefits</u>
Well-functioning information intermediaries/tools/products	Facilities information distribution
Education about employee responsibilities and how to operate within the system	Facilitates understanding about how distribution mechanisms should be organized Facilitates usage of preferred distribution channels
The distribution channel preferred by the organization should provide added-value compared to other alternatives	Facilitates economies of scale in knowledge distribution
Easily codified knowledge is distributed via an information management system	Distribution via an IMS has marginal cost close to zero
Well-established information organization and storage	Facilitates linking of previously separate information Facilitate information distribution
Information distribution should be adapted to user preferences and needs	Facilitates fast distribution of accurate information

General characteristics - Information Organization and Storage and Document Handling	
<u>Characteristics</u>	<u>Benefits</u>
Coordinated information storage	Facilitates linkage to the past
Information storage meets internal business needs	Facilitates coordination in large organization
Information and documents are maintained in the most economical way	Prevents waste of capital resources
Information and records retention schedules in place	Prevent flooding of irrelevant information and outdated documents Facilitates compliance with regulatory and operational environment
Store information in a standardized and systemized way	Facilitates acquiring of information Prevents knowledge from leaving the organization when employees changes jobs
Counteract silo-based organizational structure	Facilitates a holistic view and cross-functional coordination
Documents handling routines are incorporated in the day-to-day operation	Facilitates improved efficiency in document handling routines
Education and prioritization of information and document handling	Facilitates sustainable document and information organization and storage processes
Incentives favoring profound document handling	Facilitates higher prioritization
Documents retention meets regulatory and operational considerations	Facilitates compliance with legal and operational requirements
Top-management commitment and clear ownership	Facilitates continuous upkeep of document handling routines Prevents document handling routines to be outdated

As seen, the two fields are closely interlinked and affect each other to a great extent. For instance, the document handling and information storage routines cannot be distributed without an efficient information distribution. On the other hand, efficient information distribution cannot be obtained if the organization and storage of information is uncoordinated.

Chapter 3: Methodology

Throughout the first period of the project, existing theories and literature from the fields of information management, knowledge management, organizational learning, and records management were reviewed. The review included theories about how to design and implement information management systems with emphasize on literature addressing knowledge management, how to assess information needs and how to achieve a theoretically efficient storing and sharing of information.

The master thesis has been conducted as a case study with focus on qualitative research design; a suitable design since the aim with the project is to investigate the transport documentation and information management processes at single and unique company, Volvo Logistics.

Bryman and Bell (2003) defined a basic case study as entailing a detailed and intensive analysis of a single case, for example a single organization, which makes this type of design suitable for this project. To satisfy the aim of the research, detailed and in-depth information about the unique conditions and work procedures of the specific company was required. Moreover, the thesis can also be defined as a unique case since its purpose is to present guidelines about documentation handling adapted to the specific organization. The study has been conducted by using a mixed research approach that can be defined as somewhat deductive and somewhat inductive. A deductive approach can be described as a method where the researcher, based on what is known about a particular field and of theoretical considerations in relation to that field, deduces a hypothesis that is empirically investigated (Bryman and Bell 2007). In this research, the findings from the literature review were used as reference material when designing the deductive study. The created hypotheses were later tested against our empirical findings and were, through a qualitative investigation, either rejected or accepted.

However, the project can also be said to include elements of inductive methodology. This type of research is characterized by that theories are formed based on findings from the collection of data or experiments (Bryman and Bell 2007). For example, one important aim in this thesis has been to examine the processes of document storing at Volvo Logistics and to provide guidelines based on the findings from that investigation. The reasoning and analysis regarding the possibilities for a shared document handling process between the different functions at Volvo Logistics has been based on findings from interviews at the same time as literature and theories were studied. This iterative process with the merging of data and theory back and forth has enabled the development of a comprehensive theoretical framework that is aligned and comparable with our empirical findings *“there is certain logic to the idea of developing theories and then testing them. For instance, in everyday contexts, we commonly think of theories as things that are quite illuminating but that need to be tested before they can be considered valid or useful.”* (Bryman and Bell 2007 p. 13)

3.1 Research Strategies

When it comes to research strategies, a distinction between two different approaches is often done, mainly as it represents a useful mean of classifying different methods of

business research and because it is a helpful umbrella for a range of issues concerned with the practice of business research. The two approaches are qualitative and quantitative, where the qualitative method can be seen as putting emphasis on the interpretation of reflections, feelings, beliefs and words rather than collection and analysis of raw data (Bryman and Bell 2007). The quantitative method, on the other hand, can be described as entailing the collection and analysis of numerical data (Bryman and Bell 2007).

As previously stated, this project has been a case study where the main research strategy has been of qualitative nature and has taken its start-off point in semi-structured interviews which have been complemented following up questions. The researchers have also spent a considerable amount of time at Volvo Logistics in order to get to know the interviewees, increase familiarity and thereby enabling more elaborate discussions. The qualitative approach was chosen since a deep understanding of several different aspects often related to emotions, feelings, beliefs and interpretations were needed. The strategy also aligns very much with arguments made by Bryman and Bell 2007: *“It is certainly true that exponents of the case study design often favor qualitative methods, such as participant observation and unstructured interviewing, because these methods are viewed as particularly helpful in the generation of an intensive, detailed examination of a case.”* (Bryman and Bell 2007, p. 60). Nevertheless, one part of the deliverables was rather data intensive; the mapping of documents and their accompanied storing requirements. In order to solve these matter specific follow-up questions was used.

3.2 Semi-structured interviews

In order to evaluate knowledge sharing and information management processes at Volvo Logistics semi-structured interviews were held with persons from the different divisions. In total, 23 interviews were conducted and discussions were mainly held around document handling, knowledge sharing, and information management processes at the company. Additionally, interviews were carried out with an external accountant and legal counsel.

The primary data is the main source of information that the project has been based on, consequently, a great emphasis has been put on the interview design and formulation of interview questions. In order to give the interviewees a chance to prepare before the interview an email describing the thesis, the researchers, the goals and the topics for discussion were sent out.

The questions were designed in parallel with, and after, the literature review to ensure that the interviews were linked to appropriate theories. In order to gain additional credibility and relevance to the interviews, inspiration for formulating the questions were found in the DIRKS-manual (Designing and Implementing Recordkeeping System) provided by NAA (National Archives of Australia). Furthermore, the interviews were adjusted to the competence and position of the respondent and conducted in order to gather information about how and what types of documents Volvo Logistics manages. The interviews also dealt with laws and regulations about information storage, operational requirements, need for accessing information, how knowledge about work

processes is communicated at Volvo Logistics and so forth. The general interview guideline and questions are presented in Appendix 5.

As previously stated, in order to obtain the required information, a semi-structured interview technique has been used. This approach was used since straightforward information about what types of documents and information Volvo Logistics handles and how they store it was needed. In addition, elaborate discussions with the respondents in order to understand their feelings and attitudes towards documentation handling and the information management processes at Volvo Logistics have also provided useful input. By using this approach, the interviewee has been given a rather large freedom to reply and elaborate further on topics that the interviewee found most important or interesting. Thus, the interviews can be seen as structured into two parts, where the first one was concerned with the documents each specific department deals with and the second part was concerned with the attitudes towards documentation handling, information management and related issues experienced by the respondent.

The interviews were carried out in each person's office and one of the researchers asked the questions whereas the other took notes and filled in with complementary comments and inquiries. The interviews were recorded and later transcribed. Moreover, the questions asked did not always follow order outlined in the interview guide. The researchers also tried to keep a relaxed atmosphere with the interviewees and make the interview into a discussion and not a questioning.

A total of 23 interviews were held with different people from different divisions and with different areas of responsibility within the Volvo Group, Volvo Logistics and auditing firms. A snowball-technique was used where the interviewees were asked to refer to other people that might be of interest for the study. This technique enabled contact with knowledgeable people in every part of the organization and consequently gave a more holistic view of the situation.

3.3 Data analysis

As one part of the interviews consisted of questions dealing with pure data collection on what types of transport documents the different functions within the Volvo Group manages, generating straight-on answers which were analyzed after being coded and organized in an Excel sheet.

The other part of the questions however, consisted of more open questions addressing how the different functions at Volvo Logistics are working with documentation handling and were aiming for mapping information needs and operational requirements. The deliverables of this research can be summarized as finding common document handling work procedures that can be applicable, stored and distributed to the entire organization. In order to arrive at a satisfying solution, the data and theories have been developed and revised throughout the entire study. When the interviews were transcribed and analyzed, the findings were summarized to get an overview of how Volvo Logistics works with document handling and information management, the current processes were later

compared to theoretical models. Based on these findings, guidelines for how to store information and documents have been developed.

3.4 Research Approach - document handling

In the process of examining the prerequisites for more efficient and coordinated documentation handling process at Volvo Logistics, this thesis has used a stepwise methodology inspired by the methodology for Design and Implementation of Records Systems from National Archives of Australia and State Records of New South Wales presented in more detail in appendix 8.

Firstly, a preliminary investigation, of the legal and business contexts affecting the firm's need to organize and maintain records and documents were mapped. In this step, the general internal and external requirements affecting Swedish organizations' document handling were examined.

In the second step, an analysis of Volvo Logistics business activities was pursued. An examination of what documents the different units within Volvo Logistics encounters in its daily business activities and how these documents are captured, stored, and used was done. Moreover, descriptions of business processes and especially points describing how to handle documents were examined.

In the third, the identification of requirements for records, operational and regulatory requirements for creating, storing, and keeping records were investigated and summarized in a structured way. The investigation conducted in this step has been more focused on details and dealt with the specific documents found in the second step and the requirements surrounding these documents.

After that, an assessment of the existing systems was done. In this step, the existing systems and routines for storing and receiving documents at Volvo Logistics were examined. Furthermore, it was investigated how well the existing systems corresponds to the internal and external recordkeeping environment of Volvo Logistics.

Finally, by following the guide provided by National Archives of Australia and State Records of New South Wales a structured approach towards the document handling routines at Volvo Logistics was enabled.

3.5 Reliability and validity

Reliability and validity are methods for ensuring and describing the quality and rigor in research processes and the reliability in the findings of the research depending on a number factors, e.g. the research question, how data collection is performed, how data are analyzed, and how conclusions are made. Reliability illustrates how successful a research method is in producing similar results in varying circumstances while validity in more subtle way addresses how accurate a method is in measuring what is intended to be measured (Roberts, Priest, and Traynor 2006). According to Bryman (2001), reliability and validity are primarily important criteria for ensuring and measuring quality in quantitative research where for example measurement validity is an important preoccupation. In qualitative research, which is the nature of the research in this thesis,

measurement plays no significant role and thus validity may, at first glance, seem to be irrelevant for these types of studies. However, there are methods for adapting reliability and validity to the conditions of qualitative research by moderating the focus on issues of measurement.

3.5.1 Reliability

Reliability can be seen as a measurement of the trustworthiness of research procedures and the data gathered during the research. Furthermore, reliability also addresses to what extent the findings of a measure or a study are repeatable during different conditions (Stiles, 1993) (Bryman, 2001).

Thus, in order to enhance reliability in this study the same questions have been asked to all interviewees with the purpose of confirming findings from persons in different circumstances. Detailed notes have been taken both during throughout the research process which, according to Roberts, Priest, and Traynor (2006), will improve the projects auditability and thereby also its reliability. Moreover, all interviews have been accurately recorded and transcribed which both, also according to Roberts, Priest, and Traynor (2006), are examples of research procedures further improving reliability.

During the analysis of the data, the working procedure has been to move backward and forward between the data and our interpretation in order to create firm links between our interpretations and the data. This has for example been done by using the interviewees' interpretations of different situations as illustrations for the findings of the study. Moreover, an approach suggested by leading international archival institutes has been followed.

3.5.2 Validity

Validity estimates how well the research methods measure the phenomena in focus (Punch, 1998). Some researchers have claimed that validity is not a useful term for qualitative research. On the other hand, many have also realized that there is a need for qualifying measures or checks also in qualitative research (Golafshani 2003). In qualitative studies a potential pitfall in trying to achieve validity is the risk of being affected by personal perspectives when gathering or interpreting data leading to researcher bias (Johnson, 1997). When performing qualitative interviews, the validity of interview data has to be taken into consideration to minimize the risks of missing out on certain aspects of the data due to subliminal views of the researchers (Roberts, Priest, and Traynor 2006). The empirical findings have mainly been obtained through semi-structured interviews, a strategy that has enabled the interviewees to give elaborate answers and the researchers have been able to ask for clarification and follow-up questions. Respondent validation, i.e. answers and interpretations have been confirmed with the respondents, has been used in this thesis in order to reduce the risk for researcher bias. The researchers of this study has aimed to achieve trustworthiness, and ensure that the results of the study is measuring the phenomena in focus as accurately as possible, by interviewing employees throughout the entire company and letting them give describe how they perceive information distribution, organization and storage, and document handling at the company relatively freely. An aim has been to give an as trustworthy picture of these topics as possible by interviewing people at different levels and in

different divisions at the company, i.e. by interviewing as many as possible of those involved in the information management process. Furthermore, another aim has been to ensure that all interviewees give as trustworthy descriptions as possible by letting them describe how they work freely and by ensuring anonymity. This methodology corresponds with Lincoln's and Guba's (1985) arguing to use trustworthiness for establishing confidence and internal validity in the findings of qualitative studies. Moreover, as documentation handling and knowledge dispersion within a logistics company is a fairly specific topic with several unique factors affecting the current and future routines, a case study can be considered to be the best approach.

Chapter 4: Empirical findings

The empirical findings chapter is divided into two sections. The first section presents the study's findings about the current information distribution procedures at Volvo Logistics. The second section presents findings about the current document handling processes, the most frequently encountered documents, and operational and regulatory requirements related to document handling. The most commonly encountered documents are categorized into four groups:

- *Freight documents*
- *Accounting material*
- *Agreements*
- *Other transport documents*

4.1 Section 1 – Information Distribution at Volvo Logistics

When summarizing the narratives it stood clear that a vast majority of the information within the current information management system consists of work processes and routines. From a majority of the interviewee answers it also became evident that the employees at Volvo Logistics preferred to contact the responsible persons directly when there was a need to gain access to specific knowledge. Many of the interviewees regarded face-to-face or phone interaction as the easiest way to get information and the most common way to answer the question “*what do you do when you do not know how to perform your work task?*” was: “*then I call someone who knows*”. This rather informal approach to knowledge sharing can be exemplified by one interviewee who said:

“The biggest flaw is a partly my own fault. When we are looking if we have done something right or wrong we do not go into our information systems but rather talk to our colleagues face-to-face. But there are continuous updates, at least from our side, but I do not think that it exists everywhere.”

Several of the interviewees expressed similar attitudes regarding how knowledge is easiest retrieved and communicated at the company. It can, from the answers in this research, be stated that the employees at Volvo Logistics to a large extent finds it easier to retrieve knowledge by asking persons in certain positions directly rather than to look for written down guidelines in the existing information system.

Many of the interviewees described that they have, as most of the persons in managerial positions at Volvo Logistics, worked at the company for a long time. They have described this as something that partly has contributed to a relatively informal culture of knowledge management in the organization and people often know who to call when they need an answer to an inquiry. As seen, many employees confirm that they prefer to use a people-to-people approach to acquire new knowledge. One of them did for example state:

“I rather use the central information management system to identify persons who might possess the knowledge I need than to look for the actual knowledge in the system by myself”

A number of practical flaws related to the current information system have been found during the interviews: the systems lacks in user friendliness, the search engine is complicated, chaotic and confusing structure making it difficult to find sought after information and leading to difficulties to know if the latest instructions have been found, incompatibility with several common document types leading to use of alternative systems. For example one interviewee said:

"Some things are not good to upload in the information system, for instance, it does not support Excel-files and Power-point presentations"

The study has found that these types of flaws has created a situation where the documentation of knowledge and the use of written down instructions varies between users in different parts of the company; many of the employees do not use the system at all since they see it as insufficient for helping them in their daily work. Some interviewees has expressed that the system appears to be unfinished partly as a result of that a key person behind the implementation of process maps left the company before the system was fully developed.

On the other hand, some of the interviewees said that the implementation of process maps has made it easier to find their way in the system, but also that it is necessary to know in advance what process they are looking for information about and that it can be very time consuming to locate information if this is not clear in advance. This has led to a situation where it is difficult to find knowledge that is more general and not really linked to any specific process in the organization. For example, one manager described the main idea with the system as something positive but also some pitfalls in how to know where to look for information and a need to get coherent processes for knowledge sharing throughout the company:

"First of all, from a distance it is very good to have everything in one system of course and it is even better to have the same methodology used to document everything in there. This is something we want to have. There is still a way for normal day-to-day working people in their jobs to have reflection and go in there and find their way back. But if you go in to the system you need to know what process you are in and secondly we need to get things more updated in there. That is another thing that could use more momentum and speed because we have quite a lot of work to be done to reach this process maturity."

Furthermore, one employee expressed that it was difficult to know if all instructions describing a work procedure where found when searching for information in the system and stated:

"For example, when I want to know how to perform a task and look for instructions in the system and find a document about it in one process and then another one in another place I get confused and ask myself: have I really found all information about this now, and will I do this in the right way?"

This is a common view among the employees and a large share of the interviewees expressed similar feelings, and according to some of them there is a widespread insecurity about how to use the system and find written down instructions for work procedures in the company. In this study, one of the most recurrent explanations for this feeling among the employees is that the system has an inadequate, or at least complicated, search engine that makes it difficult for the users to find the documents they are looking for. This, in turn, leads to a feeling that it is pointless to use the system for finding instructions, and especially when they are searching for information about an activity that is outside their own processes. For example, one manager described the situation as follows:

“Our existing information system has some problems when it comes to documentation handling and knowledge sharing. For example, when it comes to how to find the documents you are looking for the search engine is not good enough; it is not easy to navigate in the system. The possibility to describe everything that is needed is there, and there are probably instructions for a vast majority of our work procedures, but you have to be aware about how the system is constructed to find what you are looking for and that is probably very difficult for a beginner to be. I believe that most people are good at finding documents related to their own organizations but for example, I find it very complicated to look for information about the process of the other organizations within Volvo Logistics. Sometimes we have to be able to ensure that everything is done correctly since there are hand-over points between our businesses and this is a potential source of error.”

Another example of how some of the employees see the search function in the system as frustrating is how one of the employees stated:

“It is almost impossible to find the information you are looking for, I would want it to work more as the search engines I am used to, such as Google or Wikipedia.”

Moreover, several of the interviewees described it as problematic that out-of-dated documents are circulating in the system and a recurrent explanation for the reasons behind this situation is that there sometimes are ambiguities in the responsibilities for updating documents due to ownership issues. The documents in the system are in most cases owned by those who published them, which means that they are often updated in a good way as long as those persons who have submitted the documents are left on their respective positions. But, if a person with ownership for documents in the system leaves the company, or just the current position in the company, the ownership of the documents are in most cases not handed over to the successor. This has created a situation where documents without clear ownership of floating around in the system which then has to be searched out and distributed to the right people by central functions, something that is difficult and time consuming. Currently, a central group has the task to sort out outdated documents in the system. This is done manually and is described by them as a very burdensome process

Moreover, the main purpose with the information system is to have detailed descriptions of the core processes of the different parts of the company and underlying work procedures in place. According to one of the interviewees, the idea with the concept is to have a system in which employees can find support when trying to solve commonly encountered problems and find instructions for how their work should be done. Furthermore, the system should function as a tool ensuring that there are coherent processes and methods for communicating work instructions throughout the company. One goal is to have unified process descriptions globally.

However, during this study it has been found that the level of how well the original purpose of the existing information system is fulfilled varies between units. The up keeping and maintenance of instructions, prioritization in updating of instructions, and usage frequency are some of the most prominent factors with the largest difference between units. The described pattern is resulting in a lack of continuous and proactive work with the system and is thus causing it to moving further away from satisfying user needs.

The systems failure in meeting user need and preferences is expressed as a problem by many of the employees. One example of this problem was given by one of the interviewees who stated that:

“The information in the system is often not helpful since there are many irrelevant and outdated documents circulating.”

A widespread opinion among the interviewees was that the company is characterized by what they described as a silo-minded culture where people often are unaware about what type of work that is done in other parts of the organization and that there is very little communication between departments. Many stated that they did not know anything about what types of problems that the other departments encountered in their daily operations or about their solutions to these problems. Some employees have described the collaboration between different parts of the organization as:

“We almost do not know how they perform their tasks on the floor above. There are watertight bulkheads between the divisions“

A common way to find solutions to encountered problems is instead to call a small number of persons in central positions at the company. In turn, these persons end up answering similar questions several times. For example one interviewee said:

“People call me and ask me similar questions about fairly simple work procedures very often. For example, when it comes to document handling I get several questions of the same type every day, they ask me how to store documents. What is regarded as accounting material? What does this document mean? And so on. It is difficult to communicate work instructions in the company and we lack guidelines for how to do it.”

Throughout the research, it has become evident that knowledge about work procedures is mainly shared by using a person-to-person approach even though an information system with purpose of sharing written down descriptions of work procedures and processes is in place.

The level of contribution of new knowledge to the existing system varied significantly between units around the company. For example, some managers stated that their departments had the intension to write down instructions for as many of their processes as possible in order to communicate clear and unified instructions to their employees. Others regarded it as meaningless since they would not have any benefit from it in their daily work activities because people know how to perform their daily work tasks anyway.

A somewhat inconsequent picture of how well work procedures are documented and communicated at the company has also been found. A majority of the interviewees describes that they practically never use the existing system for retrieving knowledge about work procedures and expresses several negative opinions about the system. However, some interviewees express a more positive view of the system. For example one interviewee described the system in the following way:

“It is a very good tool, it has a search function and if I do not have the information I need it function as a database where I can see how the different processes in the company work, and I am quite good at finding what I am looking for. Today, I do not often look on how the other units in the company do their work; it is more common that they look at our documentation than that we look at theirs. Anyway, our processes are well described and we are good at updating the information. In any case, I think it is a good system and I am not sure that we would manage to do a good job without it.”

While another interviewee said:

“Overall, I see the system as a good tool for finding information about how things should be done around the company. If we look at the structure, it is always possible to look at the document type or, if you can guess what the document is called, or what process it belongs to you are almost always able to find it. But otherwise it is not always easy though.”

The updating of the documents has been a bit sporadic throughout the organization. This has made it a bit more difficult to find what you are looking for. I know someone who was in the company previously tried to do a good job and bring order to the system, but did not really have time to finish before he left the company. However, I think it works well in our division. Here at least two persons have ownership for the posted documents, so we have a back-up if one leave, and we look over our processes on annually.”

The difference in how and how frequently employees use the current system can be seen as a result of different educational level. Employees with a good understanding of the system tends to use it more often and in order to retrieve information. For example, one participant in the study expressed a general feeling in the company that work instructions

are communicated in such a poor way in the information systems that the only functional way to get help in their daily work is to ask someone with knowledge or experience about how the task should be performed.

“Those who are good at finding information in the central system are those who are working with the concept of process maps on regular basis, i.e. the business process managers and a few more. I believe that these persons find it much easier to locate documents in the system and thus use written down instruction more often than the rest of us. I also feel they do not really understand why we find it difficult to find what we are looking for in the system.”

To sum up, the view on how well information distribution functions at Volvo Logistics varies between different parts of the company. Some of the interviewees said that they think the system is good and that their tasks are well described, and that they, even if they do not go in and check there often, see it as a good support to use if they have any questions about how to perform their work or about how to solve a problem. But, a majority of the interviewees described the system as complicated and inadequate for their daily work; many even said that they never use the system because of its flaws.

4.2 Section 2 – Document Handling at Volvo Logistics

A mapping over frequently encountered documents at Volvo Logistics and each division respectively can be found in appendix 2. The mapping has provided evidence that no company-wide coherent routine for document handling exist and that different divisions manage same types of documents in significantly different ways. For example, outbound generally store their freight documents to the end of the current year plus 10 years², whereas inbound retains the same documents for 1+3 years. Throughout the research, it has become apparent that document handling is considered to be a “must-do” process in order to fulfill the requirements set by regulatory agencies and international standards etc. Consequently, as long as external and internal audits have not pointed out any regulatory infractions, the current process has been kept.

“The documentation handling is not a prioritized question”

The mindset leads to documents being stored for a longer period than what is required, “just to be safe”. Documents are mainly stored in accordance with regulatory requirements. This approach is used since the length of operational storage-requirements of a document is usually significantly shorter than the regulatory demands. However, the general understanding and continuous updates about the regulatory environment is, in many cases, inadequate which results in that palliating changes in regulatory demands are foregone. For instance, several division store documents for 1+10 years and are not aware of the fact that the Swedish accounting legislation has changed and now only demands retention of 1+7 years. Thus, the processes in place today are far from optimal and are mainly based on educated guesses, inherited routines, low priority, lack of top management commitment, and an overall ad hoc approach.

² From here on referred to as 1+X years

“If it is accounting material then it should be stored for 10 years.”

“When we outsourced our storage someone told me that it (required storage) was changed from 10 to 7 years, but I don’t know.”

As stated, the current documentation handling process is characterized by a fairly low priority and a lack of consistency. The lack of prioritization is also reflected at top-management level, and many of the respondents confirm this by stating that there are no guidelines or demands coming from top-management.

“We did a mapping 5 years ago in order to gain a holistic view. However, this was just a one-time-effort and something that is not done anymore. Generally, there are no communicated rules that we have to follow and there is also a lack of consistency when it comes to documentation handling. Besides, we get new instructions every year or every time there is a new boss coming.”

”When you look at it from a distance, it probably looks good, but it is a totally different thing in reality.”

Another evidence of the lack of prioritization can be seen in one of the answers given on the question: Have any idea about how to destroy the documents after they have served their purpose?

“No, and by the time we are to get rid of the documents I will be gone.”

This attitude is also shows that Volvo Logistics lack a coherent retention schedule. It is also evident that people within the organization see the documentation handling as a problem but since the question has low priority, most of the people let it pass. Common answers related to the handling were:

- We save too much for too long time
- We store too much of our documents in paper format

Interviewees have expressed that issues regarding the paper document handling is difficult to solve as it involves several parties, mainly legal institutions and business partners. First of all, the regulatory requirements in Sweden have changed and increased the acceptance of electronic documents throughout the past years; however, it is still far from optimal. Secondly, since Volvo Logistics is operating in an international environment where the level of computer literacy is very different from one country to another, they still receive several paper documents on a daily basis. Volvo Logistics will thus have to make the paper copies digital by themselves. This will add another work-procedure to the company and the associated cost will, according to some interviewees, outweigh the potential benefits of having more documents stored electronically.

”We talked about a paperless society in the beginning of 1990 and started with EDI’s somewhere around 1995 and just look at where we are today. We have not succeeded yet”

4.2.1 Current document handling process

Volvo Logistics have since February 2011 outsourced the paper format documentation handling processes to ReCall, a global information management specialist. The process of the storage is described in the picture in appendix 6.

Thus, the collaboration is still undergoing a development and it is therefore difficult to say what the future setting between the two parties will look like. For instance, a clear retention schedule describing which documents that needs to be kept, have not been fully developed. The lack of a coherent retention schedule result in a mindset that the storing-ownership and responsibilities of documents is passed on to ReCall as soon as the boxes of material are sent away.

Other issues that the interviewees have expressed are the lack of clear responsibility and ownership over the connection to ReCall.

”I tried to order the boxes that are used for storing at ReCall but it was very difficult. You have to have a certain username and password so I called the person who was signed up as responsible for the contact with ReCall but he was not aware that he was responsible and he could not help me. I ended up storing the documents here.”

4.2.2 4 Different types of documents

As previously stated and seen in appendix 2, Volvo Logistics encounter several different documents on a frequent basis. Thus, in order to make an easily understandable and general guideline with a simple structure over the document handling at Volvo Logistics, the researchers have divided the documents into four categories:

- Freight documents
- Accounting material
- Agreements
- Other transport documents

4.2.2.1 Freight documents

When it comes to the freight documents encountered in the daily operations, the GBO’s and Customs division are mostly affected, mainly since they are more involved with the day-to-day operations of the logistics services compared to the other functions.

There are different freight documents depending on which type of carrier that are used when carrying out the transportation; it could be trains, airplanes, trucks and so on. The rules and regulations regarding the different transportation methods are commonly set by international conventions; CIM (for transport by rail) and CMR (for transport by road) are for instance based on UN recommendations for uniform international rules whereas the AWB (for transport by air) is operating under a different legislation. This, of course affects how the different documents should be handled, stored and retained.

Document	Storage time
Transport by sea (B/L and Sea waybill)	1+1 year
Transport by air (Air waybill)	1+2 years
Transport by road (CMR)	1+2 years

These differences stem from different periods of limitation and might be a source for problems when it comes to company compliance to the determined handling routines and in case of a legal dispute. After the expiration of the period of limitation, the shipping can no longer be subject for complaint.

However, in the case of Volvo Logistics these retention legislations are of no value, as Volvo Logistics have to save their documents according to regulations set up by insurance companies. Usually, the insurance companies require retention of documents for 1+3 years. Consequently, all freight documents are generally kept for a minimum of three years. Moreover, the freight documents have another additional and important purpose. It is an evidence that a transport actually has occurred and is thereby sometimes of importance when it comes to billing procedures.

“Waybills have an important evidential role when proving that the transaction has occurred. It shows that the discharger has passed on the goods to a transporter and the transporter has shown that he has received it and later passed it on to his receiver.”

The fact that these documents sometimes constitute an important part of the billing procedures and are referred to at invoices etc. forces the freight document to be stored as an accounting document and thus in accordance to the Swedish accounting legislation, “Bokföringslagen” from which relevant sections are presented in appendix 3. There are no clear definitions of what an accounting material actually is in “Bokföringslagen”, thus, categorization of documents as accounting material can be regarded as a potential source for problems. This is also independently confirmed by two key-persons at Volvo Logistics. They both express the same attitude towards the storage of waybills:

“When it comes to documentation handling, the storage of waybills is the routine that I get the most questions about.”

“We struggle when it comes to the storage of waybills. Yes, it describes a business transaction, but does that make it an accounting document? Honestly, I don’t know. We have been talking to our external auditors but they give no clear answers. Maybe if you have some other support for a transaction, the waybill is not that important.”

This issue will be elaborated upon in section 4.2.2.2 accounting material. However, generally, it could be said that if an invoice refers to a freight document, then it is accounting material and should therefore be stored for a minimum of 1+7 years according to “Bokföringslagen”. If the invoice itself specifies all the required details, the freight document has no additional value and could be left out and thereby only retained for insurance purposes, i.e. for 3 years.

In the table in appendix 2, the differences in storing procedures when it comes to freight documents between the customs divisions and other divisions in the company become evident.

“We cannot do an import without a complete and specific invoice”

The customs division does not produce any documents themselves but is collecting the required information when a cross-border transaction occurs. Thus, it can be seen as the end station for several documents. The customs division has operational and customs compliance responsibilities and is thus trying to connect the structure and the legal requirements. The latter is of significant importance for the documentation handling; the customs division has to take the Swedish accounting as well as customs legislation into consideration when deciding how to operate. In case of a disagreement between the two legislations, the Swedish accounting legislation is the one that they follow since it has longer time requirements for retention of documents compared to other legislations. As previously stated, the accounting legislation requires 1+7 years of storage for accounting-related material whereas the Swedish customs legislation “Tullagen” only requires 1+5 years. Tullagen, 3 Kap. §5 can be interpreted as: “A party responsible for providing a customs authority with documents should retain these for five years, or for a longer period of time if the contained information or handling are subordinated any other law or constitution.” Thus, the customs division at Volvo Logistics must retain their documents for a minimum of 1+5 years. Nonetheless, in order to be safe, a lot of documents are saved in paper-format for the entire 1+7 years.

An interpretation of Chapter 7, 2 § in “Bokföringslagen” is that accounting information can be stored in micro text and machine-readable format as long as it is durable and easily accessible up until the seventh year after the end of the calendar year of the fiscal year ended. Moreover, the material should be stored in Sweden, in orderly condition and in a safe and orderly manner. The original paragraph is presented in appendix 3.

This implies that a majority of the documents encountered by the customs division could be stored electronically in accordance with the Swedish legislation. However, one of the interviewees from the customs division stated that this would be difficult because of practical reasons. Due to that the transporters need to have many of the documents with them when they cross national borders, and since the level of computerization varies a lot between the countries Volvo Logistics do business with, it is rarely possible to obtain the necessary documents in electronic format. Thus, it would mean a lot of extra work for the customs division if all documents had to be stored electronically; of this reason it is easier to store them in paper format.

“Under normal conditions, the customs administration usually only ask for verifications of transactions 3 years back. Theoretically, one could say that we would only have to save the documents for these 3 years. However, the tax office operate under a different legislation and when they do their audits they go back longer. Consequently, we need to store many documents for the entire 1+7 years.”

The customs division saves the freight documents in paper format together with other customs related documents; this procedure generates a significant amount of paper that is stored in fireproof filing cabinets. The interviewees expressed an opinion that the procedure is “good enough” and that search cost related to the paper handling outweighs the inconvenience of having to scan, search and scroll in massive digital documents. However, some respondents expressed a slightly more positive attitude towards the electronic alternative:

“In the long run, I think that we would benefit from more digital handling, but today the overall digitalization and computer literacy of the industry and in the world is too low”

A similarity between the different units is that the documents are stored according to regulatory requirements rather than operational. The freight documents are of little operational value and are commonly not used as a basis for decision-making or analyses. Consequently, the rules and regulations surrounding the different documents are of great importance for the handling and determine the way and time of storage.

4.2.2.2 Accounting material

This study has found that since Volvo Logistics is a part of the Volvo Group, which is a publicly listed company at the Swedish stock exchange, they are required to follow the Swedish accounting legislation “Bokföringslagen”. To find a definition of what information and documents that can be considered accounting material is not an easy task. However, in collaboration with an authorized accountant the researchers have come up with the following interpretation³ of “Bokföringslagen” (BfL 1999:1078).

- Every business transaction has to have a verifying document. (BfL, 5 Kap. §6)

A verifying document of a transaction should contain information about:

- a) When it has been compiled
- b) When the business transaction occurred
- c) What the business transaction includes
- d) The amount of the transaction
- e) The counter-part it concerns, and in some cases contain information about
- f) Documents or other information that has provided the foundation of the business transaction and where these are stored.

(FAR Samlingsvolym 2012, BFNAR 2000:6, verifikationer)

The verifying document must also contain a number or some other type identification necessary to see the link between the business transaction and verifying document. (BfL, 5 Kap. §7) Consequently, sometimes it is sufficient to store the invoice in itself. However, sometimes it has to be completed by a freight document, specification, and an agreement or similar in order to fulfill the requirements in “Bokföringslagen”.

³ The translation and interpretation might be subject to mistakes and the researchers recommend the reader, if interested, to look into “Bokföringslagen” for exact definitions

The accounting material encountered at the different division at Volvo Logistics is rather similar to each other. It is mainly invoices and the accompanied verifications. An interpretation of BfL, 1 Kap. §2 is that ...any other information that is of importance in order to follow and understand each single and unique accounting transaction... has to be included. Thus, what is expected or necessary to include varies from time to time. A rule of thumb is that an invoice and its potential verifications should be able to answer the following questions regarding the transaction:

- When was the transaction and verifying document compiled?
- When did the business transaction occur?
- What was included in the business transaction?
- What was the monetary amount of the transaction?
- What counter-part was involved?
- If there are another documents or information that is providing a foundation for the business transaction - where are these stored?

Recently, an important change has been put into place, BfL, 7 Kap. §6 can be interpreted in a way that a company is allowed to destroy the paper format accounting material after the end of the present plus 3 years, if it has been safely transferred to any other valid format, for instance, digital.

Risk management, a division at Volvo Logistics that mainly deals with damage claims, uses the same legislation (Bokföringslagen) but encounter somewhat different documents due to the nature of their daily operations. The main documents encountered at the risk management division are related to damage claims and include; damage reports, invoices, freight documents, pictures, email conversations, notes etc. Consequently, the risk management division is a document collector rather than producer, which results in that they get the required documents in paper or electronic format. The documents that are acquired in electronic format are printed and put together with the other documents related to the specific case.

“We are paper produces and print as much as possible; we are the direct opposite of the others. It is very important that everything is correct in order for us to make a precise decision whether a case should be dismissed or not. The filing system that we use today enables a quick retrieval of the information we need. We also have legal requirements that we should keep the documents in paper format.”

The paper format claims are stored in a filing cabinet for 2 years at each administrator's office and are later sent to ReCall for an additional 8 years of storage. However, if the claim is still active, then the associated documents are kept in the offices for longer than 2 years. This way of working enables an easy retrieval of the documents that might sometimes be required.

“The claims should be stored in fireproof cabinets but we keep them in our offices.”

However, the information contained in each errand is punched into an internal computer system called Risk Management System (RMS) where the data is accumulated and the statistics can later be used for analysis and identification of root-causes of frequently occurring issues. The starting date for storage is when the claim arrives at the administrator's desk and the information is entered into the RMS.

The divisions that encounter accounting material on the most frequent basis in their day-to-day operations are Invoicing and Cost Control (I&CC) and Volvo Business Services (VBS)

There are two types of invoices that Invoicing and cost control face on a frequent basis; Electronic Data Interchange (EDI) and paper invoices. The EDI's are automatically managed via a computerized system and is seldom a source for errors or problems. The paper invoices on the other hand are somewhat more problematic.

"One of our biggest challenges if you ask me, is that since we have a lot of daily transactions, including several smaller ones where we do not have any good supporting system. This is especially the case at inbound where there are a lot of people who deal with the invoices manually. I think that some sort of system would be good, especially for the sake of invoice verification."

At Volvo Logistics, there is an inflow and outflow of invoices and most problematic of these two is the inflow. The inflow of invoices consists of two separate parts; the Non-automotive purchases (NAP) and transport and logistics purchases. When it comes to transport related invoices Volvo Logistics uses a fairly old system (CIC) where the invoices are filed in paper format in a binder with its associated serial number. There are approximately five to six thousand invoices that have to be handled manually every month. The workflow of today is described as inefficient as it involves too many manual operations and verifications. The invoices are sent back and forth several times before they are finally approved and stored at Volvo Business Services (VBS) before going to ReCall. Generally, the knowledge about documentation handling at VBS is well-spread among the employees as it is a very important part of their daily operations. The invoices are retained for a total of 8 years; approximately 1 year at VBS and the remaining years at ReCall.

"All our archiving and circulation of paper is crazy. We would definitely benefit from a more efficient process and more clear routines when it comes to the handling of documents."

Another perceived issue regarding the potential of only using electronically and automatized storing invoicing process is the fact that some countries require the invoices to be stored in paper format.

"In some more conservative countries you are obliged to save invoices in paper format even though you have it in EDI format. This is an area where the regulatory environment is lagging behind the technical development."

Employees at Volvo Logistics thus think that they have to retain those invoices in paper format as well. In Sweden however, this is not the case and although a transaction occurs over the Swedish border, a Swedish company only has to retain the documents according to the Swedish accounting legislation, i.e. in any format as long as it is durable and easily accessible (BfL, 7 Kap. §1).

4.2.2.3 Agreements

Based on the answers provided by an independent legal advisor who is also a doctor in contract law, it has become evident that the storage of agreements is a difficult subject without clear-cut lines and definitions. When it comes to storing, many agreements lack legal formalities. Crucial to what is required regarding the filing of agreements is therefore primarily based on evidential demands made by a court, the existence of an agreement and its content is especially important.

The legal counsel also stated that agreements could be stored in electronic format in all situations where the legislature does not require that an agreement should be personally signed, i.e. where an original signature is required.

"Personally, I think it goes without saying that organizations, as far as possible, should avoid paper handling."

Moreover, the timeframe of the retention of agreements that are not accounting material is also difficult to handle, as an agreement might be valid for different time periods after the actual cancelation of the agreement. In the Volvo case, the agreements and contracts between Volvo Logistics and its partners can be divided into two parts:

- Agreements with customers
- Agreements with suppliers

4.2.2.3.1 Agreements with suppliers

These contracts are dealt with at a central purchasing division and the agreements are concerned with suppliers to Volvo Logistics. The department is responsible for the contracting of all suppliers to all of the three GBOs. Consequently, they encounter a rather substantial amount of documents.

The purchasing division stores their contracts in paper and electronic format. Each purchaser has the responsibility to ensure that all signed contracts are scanned and saved as a PDF-file in a system called Volta. Volta contains information about the supplier, the agreement and other relevant data such as statistics and key performance indicators. The system is well developed and one of the respondent stated that:

"The system is working to 100 percent; it is easy to find whatever you are looking for"

People at the purchasing department use the system to retrieve, share and distribute information on a frequent basis and all of these tasks are facilitated by the clear database structure. There is no destruction of old and expired contracts, and these are instead

moved into a separate part of the system called “expired mode”. The reason for that the expired documents are not eliminated is strictly operational.

“I am not even interested in the regulatory requirements for saving the expired documents. It is our history and it is not thrown away. We have been collaborating with certain partners for 25 years and I would like to be able to go back and see exactly what was agreed upon.”

Exact copies of the digital versions of the contracts are stored in a fireproof filing cabinet to which only a certain amount of people has access. However, these are not used on a frequent basis but rather kept for historical purposes.

“The contracts are filed according to supplier and in some cases we have saved about 75 old and expired contracts. However, there is only one of the stored contracts that are valid.”

Purchasing divisions has experienced a significant decrease in their day-to-day use of paper documents and describe the development as very positive as the work-flow is much more efficient nowadays.

4.2.2.3.2 Agreements with customers – dealt with at each department respectively.

The customer agreements are separated into two other parts, one concerning the large customers and one concerning the small customers. The agreements are:

- Master Agreement (Large customers only)
- Service Level Agreement (SLA) (Large customers only)
- User Agreement (UA)
- Payment Agreement (PA)
- Add-on Services

More detailed descriptions of these contract types are presented in appendix 4.

4.2.2.4 Agreements handling

When it comes to the storage of Master Agreement, they are all stored in fireproof filing cabinets in rooms to which only a limited number of people have access. The agreements are thus stored in paper-format. Nevertheless, the storage of these agreements is somewhat inconsequent as they are sometimes stored in places where they should not be, and sometimes not even sent to the person responsible for the storage at all. Moreover, the handling of master agreements is very much characterized by a “we have always done in this way” mentality. Finally, all of the agreements (SLA, UA and PA) for the large customers are stored together.

The User Agreements for the smaller customers are also retained in a fireproof cabinet. However, once again the storage routine is inconsistent and the UA’s are sometimes stored “here and there”.

”Some agreements end up being stored where they are not supposed to – it is very messy and unorganized.”

In addition, Payment Agreements for the smaller customers are sometimes also handled in a somewhat uncoordinated way. For example, the Emballage division sometimes stores PA’s in paper and sometimes in electronic format. The paper-format PA’s are stored in binders in a cabinet (not fireproof); these documents are usually older than 2 to 3 years as scanning of the documents became standard at the time.

4.2.2.5 Other transport documents

This category consists of all transport documents beyond the freight documents associated with international conventions. These are mainly internal documents, for example packaging lists, proof of delivery, dangerous goods reports etc. The documents can be said to include all transport documents that are not officially required to accompany transports in order to fulfill the requirements of international transport conventions like CMR and CIM. However, these documents are in some cases affected by other legal requirements. For example, the dangerous goods reports are affected by the Swedish traffic legislations.

But in other cases, there are no strict regulatory demands for how to keep these documents, thus the retention of them varies significantly between divisions and is mainly affected by internal needs and routines. Therefore, when it comes to retention of these documents, individual assessments have to be made in each case.

Chapter 5: Analysis

The analysis of the findings of this study is based on Choo's process model of the information management cycle, and the characteristics presented in more detail in the theoretical summary, with focus on information distribution and information organization and storage.

Based on the empirical findings of the study, it can be stated that the current information management process at Volvo Logistics do not fulfill the requirements presented by Choo and other prominent researchers when it comes to distribution of procedural knowledge. First of all, it has been found that most of the information in the system for sharing of codified procedural knowledge does not seem to be put into the system with the information needs of the employees in mind. It is difficult to find information in the system and the flaws in usability forces the employees to use other channels to find information and knowledge about how to perform their work tasks. When it comes to the focus of this research, i.e. information distribution, and information organization and storage, problems in four key factors for achieving a more coordinated information management process have been identified.

5.1.1 Information Distribution at Volvo Logistics today

Based on the findings from the empirical study, a vast majority of the knowledge and information distributed at Volvo Logistics consists of work processes and routines, know-how and descriptions about how to best perform certain tasks, for instance, how to handle documents. These types of guidelines can, based on the definitions described in the theoretical framework, best be categorized as procedural knowledge. According to Kogut and Zander (1995), procedural knowledge is accompanied by the advantage of being easily remembered since it often is communicated in the form of figures or modules illustrating methods for communicating existing knowledge. Moreover, Ungan (2006) stated that procedural knowledge is easily documented knowledge. Therefore, it can be argued that procedural knowledge is particularly suitable for being shared by using a *codification strategy*, described by Haas and Hansen (2001), where knowledge is codified, i.e. written down, and made available in paper or electronic format. This strategy allows many users to search for and retrieve knowledge without having to contact the original contributor. Also, once the knowledge has been collected and organized in an information system, it costs very little to redistribute. In fact, the marginal cost of the information itself is very low, the cost of physical distribution is very small and tends to decrease as electronic networks and new modes of communication develops (Dertouzos, 1997)(Womac, 2002). Employee preference of personalization over codification strategy results in that several of the potential benefits discussed by Haas and Hansen, Ungan and Womac, stemming from a codification strategy are foregone. It can therefore be argued that the existing system is far from optimal. The costs associated with keeping a codification system up and running are distributed over a low number of users, resulting in very high cost/benefit-ratio. Hence, it can be argued that a codification strategy would be a more appropriate method for procedural knowledge sharing at Volvo Logistics. However, during this study it has become evident that a majority of the employees at Volvo Logistics prefer to use a people-to-people approach and contact the responsible persons directly when there is a need to get access to specific knowledge about how to perform their work tasks. People rather talk to their colleagues than trying

to retrieve knowledge from the available systems for communicating procedural knowledge. This can be interpreted as that an informal culture is established at the company, where employees at Volvo Logistics in general prefer to use the *personalization strategy* described by Haas and Hansen (2001) in front of a codification strategy when communicating and retrieving procedural knowledge. And, since Haas and Hansen (2007) stated that the choice of knowledge sharing strategy should take the people it hires into consideration, it can be argued that using a personalization method would be appropriate. Moreover, the preference for using a personalization strategy when searching for information is further enhanced by the fact that a majority of the employees consider the existing system for communicating codified knowledge to be complicated. Many interviewees described that it has shortcomings in so many aspects that it becomes insufficient in supporting them in their daily work. Due to the many deficiencies in the codification system, many expressed that they are deterred from using the system and that they do not use it at all because all because of the insecurity they feel in how to find the information they are looking for. This finding is in parity with the results of MacKie-Mason et. al (1999) who demonstrated that the end-user will seek the most easily available and least costly information they can find and that only small additional marginal costs of one choice greatly reduce the likelihood use of the specific option. Moreover, the end user of today has the option of collecting information from many primary sources; it could be via an Internet search, a formal request to the originator, a telephone call, a purchase from the publisher, or other means. Consequently, the way that an organization wants it member to distribute knowledge via must provide some added value. *“The value can come in the form of higher-quality information, more complete information, more easy or faster access to information, better organized information, cheaper information, or other factors”* (Womac 2002, p. 5). Thus, a significant share of the low usage-rate can be seen as a result of the informal culture in combination with that BMS has no advantage over other ways of obtaining information.

5.1.2 The current Information Products (Information System)

The current information system for codification of procedural knowledge have practical flaws in areas like usability, search functions, updating of information, and lack of clarity of ownership of documents. When the system was implemented many of the most basic features of a well-functioning information system was missed out. For instance, the system was not developed for presenting process maps, which is the current strategy for organizing information in the system, and also it was incompatible with several of the most common document formats, e.g. excel files, power point presentation, and so forth. Moreover, one of the key persons behind the implementation of the use of process maps left the company before the transformation of the system was fully developed and implemented; the semi-finished implementation work is very likely one of the main reasons behind the problems of achieving a more coordinated information management process for procedural knowledge. The flaws in the information system as an important factor for achieving a more coordinated information management process can also be enforced by Womac’s (2002) argument that the distribution of information is highly dependent on the information intermediaries: products and services.

5.1.3 How well information distribution is adapted to user needs

A major problem in the existing Information Management Process is that the existing system for procedural knowledge sharing do in many ways fails to meet the supposed users' needs and preferences. According to Choo (2002), information should be delivered in methods adapted to the preferences and work-procedures of the end-users, and focus should be on providing the users with as good information as possible for performing their work. Moreover, Choo (2002) also described that information acquisition is driven by information needs and should be performed in ways correctly addressing information requirements of the company. But, since a common view among the interviewees is that the system is not designed in a way making it capable of fulfilling this requirement the use rate is low. Nevertheless, some interviewees expressed a positive attitude towards the existing system for sharing of information including work procedures and processes. These respondents have in common that they work in units whose posted documents are continuously updated and revised. Moreover, these units have in common that they have cross-functional responsibilities and work with tasks demanding clear instructions for document handling due to legal requirements. Hence, these factors can be seen key factors for achieving more coordinated information distribution at Volvo Logistics.

5.1.4 Organizational Structure and differences in Education

Choo (2002) did not prioritize the impact of organizational structure, but describe organizational structures causing blockage and distortion as a potential root of organizational intelligence failures. However, the impact of organizational structure has been discussed in more detail in other research. For example, Gregory (2005) described that a silo-based approach leads to situations where it is problematic for members in organizations to see the entire picture. This study has also found this aspect to be important in the Volvo Logistics case since it exercises a significant impact over the information management process at the company.

The problem with meeting user needs has been found to be especially common among employees working in divisions that have been identified as having some silo-minded characteristics. These divisions are characterized by a few, if any, horizontal interlinks with other divisions in the company. For example, several of the employees illustrated the situation by saying that it was watertight bulkheads between divisions, and that they practically do not know how the other divisions are working. Some even stated that they not care about this since it is not relevant for their daily work. However, it was shown that employees from units with cross-functional responsibilities and work tasks are more positive towards using the existing system for sharing of written down instructions of work procedures and processes. These units were also found to be better in continuously updating and revising their documents. A common explanation to this was that employees in these units are forced to be better educated in how to retrieve and distribute knowledge in the system. This is the case both due to their cross-functional responsibilities, which forces them to have company-wide information, and because their tasks are demanding clear and updated instructions for document handling due to legal requirements. This finding is in parity with Gregory (2005) who found that silo-minded division sometimes neglect tasks that are cross-functional, for instance recordkeeping, as it is not directly linked to their daily operations. Consequently, it is not surprising to see that the cross-functional divisions at Volvo Logistics perform these tasks better.

The silo-minded organization have led to a wide diversity in how much different divisions communicate with other divisions and also in how well educated their employees are in using the current system for information distribution. This has generated a situation where it is difficult to communicate out shared instructions throughout the entire company, which is an aim for Volvo Logistics. Thus, the variety in the level of education about how the system functions between divisions has been identified as another key factor for achieving more coordinated information management process at the company.

Somewhat simplified, it can be argued that before the break-through of electronic databases the roles and responsibilities of different parties were clearly defined and understood. However, with the emergence of computer technology these characteristics have changed and the notions of creator and user are not as clearly defined anymore. Information is still demanded by its final consumers but they are now, to an increasingly large extent, also the creators of some information (Flowerdew and Whitehead 1975). This observation is, to a large extent recognizable at Volvo Logistics as well. Ownership issues have been one of the most frequent answers on questions related to why BMS does not work as it is supposed to. One potential reason is that employees, from the creation of the system, have not been given the correct education in how they must contribute to the maintenance of the system; there is no such thing as creators and users, but an employee undertakes the role of both. A better understanding of responsibilities and expectations of every member at Volvo Logistics would benefit the continuous upkeep of BMS. The lack of understanding has been further enhanced by the fact that BMS update ownership has been connected to persons rather than positions. This has resulted in that the updating of process maps etc. have been neglected as people have quit or moved to other positions. This has also resulted in that outdated and irrelevant information is kept in the system.

5.1.5 Summary – Information Distribution

To sum up the analysis of information distribution, the study has, by comparing the findings with Choo's (2002) framework and the characteristics presented in the theoretical summary, identified four key factors for improving information distribution at Volvo Logistics, and thereby achieving a more coordinated information management process. When it comes to information distribution this study has identified four key factors, or potential improvement areas, for Volvo Logistics to consider in order to achieve a more coordinated information management process.

The four key factors are:

1. The employees prefer personalization of knowledge in front of codification
2. Practical flaws in the current information system
3. The current system is perceived as inadequate to meet information needs
4. Differences in education about how the system functions

5.2 Information Organization and Storage

Altogether, the four factors related to information distribution leads to inconsistency and incoherence in how information and documents is organized and stored in the company.

The flaws in the main knowledge sharing system in combination with a silo-minded organization and an informal company culture generate a situation where it is difficult and time consuming to communicate new guidelines throughout the organization. The existing problems in providing a well-functioning system for procedural knowledge sharing, and thereby also efficient information distribution, have led to a situation where information are not stored coherently around the company. A situation that to a large extent can be attributed to the fact they are no clear instructions for how to code new information to make them easily accessible via the search engine in the system. This do also correspond to the recommendations in Choo's framework where it is described that, it is important to organize and store information in ways enabling information sharing and retrieval. The lack of standardized methods for storing and coding accurate and reliable information makes it further difficult for the employees to acquire information from the system, and according to Korfhage (1997) the form of the stored information is very important for the users' ease of later acquiring it. Moreover, Krippendorf (1973) stated that the search procedure is the central part between the user and the catalog; information retrieval devices must respond to user requests. This is an area where the company has to improve. If information is stored and organized in a more systemized and unified way, it will also be easier for the employees to retrieve past information. This has not been done in the Volvo Logistics case, instead knowledge has in many cases been closely tied to individuals and thus it has left the company when these individuals changed jobs. An important factor behind the problem in achieving a coordinated information management process is that the current method for information organization and storage in the system, i.e. in process maps, is poorly communicated throughout the organization. In addition to this, the company lacks a clear retention schedule which causes the information in the system to be unorganized. A majority of the interviewees stated that they find the existing methodology confusing and complicated and as a key reason to why they avoided using the system when searching for information many mentioned the large amount of irrelevant and outdated information, which partly is caused by the lack of retention schedules.

Moreover, the findings have shown that the current information system fails in meeting several of the requirements set up by JISC, Information Management:

- *The current information system does not meet all internal business needs. The stored information is often irrelevant, incomplete and unorganized. Thus, the employees cannot find the information required to fulfill their specific needs. In turn, this leads to difficulties in obtaining standardized and efficient organizational coordination, especially regarding standardized processes, for instance, how to store documents.*
- *The uncoordinated way of storing and organization information in the system results in that the current information systems do not enable the content of the information to be accessed, used and reused in a controlled and efficient manner.*

- *The current information systems is not kept and maintained in the most economical way.* The organization of the current information management system is far from optimal as it contains too many outdated documents and has insufficient information intermediaries. This is causing employees to retrieve information elsewhere and the information system is not used. This results in a very high cost-benefit ratio. Moreover, documents are stored for too long time, which brings additional and unnecessary costs.

If Volvo Logistics wants to fully implement the use of process maps in the system there is a large need for educating the employees in how to use them for finding the information they are looking for. Thus, a necessary step is to formulate clear guidelines both for how to distribute information and for how to store and organize information in the company.

5.2.1 Document Handling

In the case of Volvo Logistics, clear guidelines for document handling are very important due to the nature of the business itself. The company encounters large amounts of documents in its daily operations; freight documents, custom documents, invoices, and so forth. For example, VBS alone store approximately five to six thousand invoices every month. All of these document types are subject to operational and legal requirements that need to be taken into consideration in order to create a well-functioning document handling routine. The current way of dealing with documents at Volvo Logistics is characterized by a lack of knowledge, lack of prioritization, lack of top management commitment, and unclear responsibility distribution, which leads to an inefficient documentation-handling process. This way of working contradicts both DeSilva and Vednere's (2008b) and NARA's advices for improving document handling procedures by making them a part of the daily work procedures, i.e. to use business process driven records management. Nevertheless, as Schwartz (2007) pointed out there is very little for employees to gain in classifying and maintaining records. Therefore, an incentive program could be considered a suitable motivation tool for improving document handling.

Based on the recommendations and standards provided by ISO, JISC, ISADG and NARA, presented in the theory section, document management must take a wide variety of factors, from within the organization (operational) and from outside it (regulatory, legal) into consideration. For the Volvo Logistics case, the operational considerations are subordinated the legal and regulatory demands in most cases when it comes to retention of documents. For instance, the Risk Management division operates under circumstances different to the GBOs and therefore has other retention requirements. The guidelines provided by international institutions often emphasize the need for organizations to correctly identify the regulatory environment that affects organizational activities and documentation requirements. For the Volvo Logistics case, the Swedish accounting legislation, "Bokföringslagen" is of most significant importance as it has the longest retention requirement of all the laws that come into play. Nevertheless, the empirical findings has shown that the company retain too many document for too long time and is thus suffering from an inefficient and expensive documentation handling process.

The need for a better coordination of documentation handling is more important today than it was before due to a shift to the external document handling partner ReCall. Previous to this collaboration the documents were stored at an in-house central warehouse that communicated general and overall rules and regulations to the organization. The central storage division had no gains in keeping the documents for longer than necessary. ReCall, on the other hand, has gains from keeping the documents for as long as possible, as that constitutes parts of Recall's revenue. Thus, Volvo Logistics must improve the awareness of regulatory requirements in order to achieve a more efficient documentation handling, retention process and thereby lower costs.

A striking evidence of the inefficiencies can be found in the following example: based on interpretations made in this study, "Bokföringslagen" states that accounting material must be kept for 1+7 years whereas several departments at Volvo Logistics store them for

1+10 years. Thus, Volvo Logistics has the potential of saving 30% of their total yearly documentation handling costs just by changing a minor detail. Moreover, such a change includes nothing more than communicating the information into the organization and should therefore be pursued. An increased knowledge about routines, regulatory and operational requirements would improve the documentation handling at Volvo Logistics. What's more, the researchers have observed that somewhat optimal retention routines can be found in different departments. Consequently, if these procedures and this knowledge would have been communicated and shared into the rest of the organization the documentation handling routines would not have been as inefficient as they are today. Furthermore, additional cost savings are achievable if Volvo Logistics would act in accordance with the interpretation of BfL, 7 Kap. §6; a company is allowed to destroy paper format accounting material after the end of the present plus 3 years, provided that it has been safely transferred to any other valid format, for instance, digital. However, such a modification would require a significant change process as it involves an enlarged database and a change in operational routines. Nevertheless, documentation handling is not a prioritized question at Volvo Logistics and to undergo such a major change could cause more bad than good. And, based on the findings in this research, it is evident that several ambitious projects are undertaken but many of them are not taken to the finishing line.

“About 5-6 years ago, there were no rules whatsoever but then we got a new boss and suddenly we were supposed to scan all documents. Nevertheless, there was no follow-up so the initiative was discontinued”

Therefore, the required organizational and operational routine changes and its associated costs will most likely out-weight the benefits of the associated cost-reduction. Clear evidence of employee resistance towards such a change has been seen throughout the empirical investigation, a fact that would further complicate the change process. Based on these findings, the researchers recommend Volvo Logistics not to undertake such a large change process at this time, especially as the entire Volvo Group is undergoing a major restructuring phase at this moment. Still, it is a process that Volvo Logistics needs to keep in mind when it comes to future development of its documentation handling process.

5.2.1.1 Preparatory discussion - guidelines for future document handling

Based on the extensive regulatory requirements surrounding accounting material it is evident that a general guideline has to take its start-off point and build upon the Swedish accounting legislation, “Bokföringslagen”. The law contains the longest requirements for retention of documents regardless of which perspective that is used, regulatory or operational. As stated in the empirical findings, the question about how to interpret and define what documents that can be classified accounting material is commonly asked and difficult to answer. The guidelines can obviously not take every unique case into consideration. The basic idea is that as long as an invoice can answer the questions accounting material has to answer, it is sufficient to satisfy the requirements in “Bokföringslagen”. The invoice associated with a certain transaction is seen as the main verification and can thus be the only required document if it contains all of the necessary information. However, the researchers suggest that if an invoice cannot answer the

questions below, then documents that can answer them should be included. The legislation does not take different types of documents into account and consequently agreements, POCs, PODs, Packaging lists and so forth might be considered accounting material.

- When was the transaction and verifying document compiled?
- When did the business transaction occur?
- What was included in the business transaction?
- What was the monetary amount of the transaction?
- What counter-part was involved?
- If there are any other documents or information providing a foundation for the business transaction - where are these stored?

One example of when these questions come into play and are important is when an invoice is referring to a freight document or agreement. For instance, the invoice might stipulate “Prices and payment terms according to agreement XXXX” thus making the agreement an accounting document that has to be retained for seven years even though the agreement is cancelled the day after. The same goes for any other document that might be referred to on the invoice. Nevertheless, if a document is not considered to be accounting material then other regulatory and operational requirements come into play.

These requirements however, might differ significantly from one another and every unique case can therefore not be taken into consideration. Moreover, to keep the guideline as easily understandable as possible, the other regulatory and operational demands will be left out.

5.2.1.2 Agreements

As previously stated, it has become evident that the storage of agreements is a difficult subject without clear definitions. And, since Volvo Logistics encounter and establish several different types of contracts, it might give rise to several issues. However, the organization has pursued a “better safe than sorry” approach, sometimes including retention of agreements in paper format forever. This approach has the benefit of not endangering Volvo Logistics not to meet legal or regulatory demand. However, this research has shown that the current process is far from optimal and that the retention routines in some cases are exceptionally inadequate.

One of the main reasons to why the agreements are stored in the way they are today can be seen a result of lack of knowledge. The area of agreement and its accompanied storage has several dimensions and fall under different legislations depending on what the contract states etc. The complexity in combination with a general lack of prioritization has caused the organization to, as previously mentioned, pursue a “better safe than sorry” approach, sometimes including retention of agreements in paper format forever. This approach is seen as suitable by some of the employees and although it is inefficient, it satisfies the regulatory demands. A more significant issue is the agreements that are stored “here and there”. For instance, agreements supposed to be stored in a fire proof

filing cabinet are instead stored in a desk drawer etc. This storage routine fails to comply with regulatory demands and must consequently be changed immediately.

Based on the answers provided by the legal counsel, it is evident that Volvo Logistics can improve its agreement retention routines. Especially, since several documents could be stored in electronic format. Such a routine would significantly reduce the storage costs but also move Volvo Logistics away from the process where agreements are stored “here and there”. The change to a more electronic intense retention process would have to be accompanied by an improved organizational understanding regarding the retention of agreements. These improvements can be seen as aligned with the advices presented in the theoretical framework.

In order to establish an easily understandable guideline for the storage of agreements, the researchers have divided them into two parts, those that can be considered accounting material and those that cannot⁴.

With consideration to advice given by the legal counsel, the recommendation for agreements that cannot be considered accounting material are to store them in electronic format in all situations where the legislature does not require that an agreement should be personally signed, i.e. where an original signature is required. Thus, a suitable recommendation could be that the agreements should be stored electronically and kept in different databases according to their present status, i.e. active or inactive/terminated if the legislature does not require an original signature. A similar system is already partly used at the purchasing division and seems to be functioning very well. However, as described in the theoretical framework there is no such thing as a “one size fits all” recommendation for ensuring good record management.

If, however, an agreement can be considered accounting material, it must be stored at a minimum of 1+7 years and in accordance with BfL, 7 Kap. §1; accounting material that has been received by an organization should be stored in the same state it had when it arrived.

5.2.1.3 Freight Documents

As stated in the empirical findings, the freight documents are handled rather differently at the different divisions. It has also been observed that every division does either “this or that”, they either store the freight documents for ten year (the perceived requirements from “Bokföringslagen”) or for three years, which are the requirements set up by insurance companies. The current way of dealing with the documents is inefficient and the potential for standardization and consistency is significantly small. Consequently, a more standardized and coherent routine is required.

Based on an assumption that a freight document is not to be considered accounting material, the short-term recommendation is that these are retained in paper format for three years to meet the demands from insurance companies. It could be argued that Volvo Logistics would benefit from scanning and keeping the documents electronically.

⁴ This division is a significant simplification

However, since a majority of the freight documents arrive to Volvo Logistics in paper format, the scanning would add an additional task to the day-to-day operations at Volvo Logistics. Several respondents made it clear that they were opponents to such a change and consequently, the risk for more negative than positive effects is vast.

If a freight document would be considered accounting material, BfL 1999:1078, 7 Kap. §1 comes into play. This paragraph can be interpreted as; accounting material that has been received by an organization should be stored in the same state it had when it arrived. As stated, the freight documents received at Volvo Logistics arrives in paper-format and should consequently be stored in the same way. Thus, if the documents were to be scanned, they would still have to be kept in paper format. Secondly, it would add an extra task to the day-to-day operations at Volvo Logistics, a task that is not wanted by the staff. However, long-term improvement would obviously be to use a more digitalized document-handling routine but as the use of computerized systems varies a lot between Volvo Logistics' collaborating partners this is not yet an option. Moreover, the legislation within this area is lagging behind the technical and computer development resulting in heavy restraints in terms of development and potential improvements of documentation handling in Swedish companies. An attempt to update the regulatory environment was made in 2010 when BfL 1999:1078, chapter 7, §6 was added. This paragraph can be interpreted as; a company is allowed to destroy the paper format accounting material after the end of the present plus 3 years, if it has been safely transferred to any other valid format, for instance, digital. The legislative change offers potential cost-savings as the need for paper-format retention is significantly decreased. Nonetheless, the transition to such a system would be a too large process for Volvo Logistics to undergo at this moment, especially as the Volvo Group as a whole is undertaking a significant change process right now.

The researchers suggest that the divisions move away from the “either or” approach of today and move towards a more adaptive and coherent approach. Freight documents that are considered accounting material are stored according to “Bokföringslagen” while others are stored for three years due to insurance requirements. In order to achieve such a change, significant improvements in the knowledge regarding documentation handling and more specifically what documents that can be considered accounting material are necessary.

5.2.1.4 Customs division

The customs division, encounter several freight documents as well, but they are not able to destroy them after 3 years, even though a freight document cannot be considered accounting material as they operate under the Swedish customs legislation Tullagen and therefore have to retain the documents for at least 1+5 years. The retention of documents within this division is mainly characterized by paper-format documents stored in fireproof filing cabinets. This way of working enables quick retrieval of the sought after information as the employees are used to this way of working. This procedure is not optimal in terms of efficiency but once again the research has shown that a good enough approach is used. This fact can once again be connected to the low priority of documentation handling and the accompanied potential improvements. The employees are satisfied with the current routine as they do not have to scan received paper-

documents or “*scroll in massive digital documents*”. However, several interviewees’ express an understanding that the system is on the edge of being outdated and that a more digitalized procedure probably is coming closer.

Due to the fact that Volvo Logistics is handling large amount of documents, and with the advices in the theoretical framework in mind, the potential for improvements in document handling procedures are large. For example, an implementation of more electronic document handling procedures could facilitate both information sharing and the coordination of document storing. However, many of the relevant documents are still received in paper format, almost all in some departments, and thus the work effort required to digitalize all these documents has to be taken into consideration. At present, the cost for doing this is still too high for justifying the full implementation of electronic document storing. Moreover, legal requirements do still in some cases require the retention of paper copies. Therefore, capabilities for storing paper documents still have to be maintained. Nevertheless, even though an implementation of electronic document storing systems not yet is a suitable alternative there are still several areas of improvements when it comes to document storing at Volvo Logistics. Moreover, many of the employees at Volvo Logistics are aware of the potential for improvements but yet it has been difficult to pursue any changes. The issue appears to be low prioritized and the document handling procedures at the company can be interpreted as characterized by a mode of resignation. The current document handling procedures are perceived as malfunctioning and chaotic but at the same time this is not regarded as an important question among a majority of the employees. Therefore, the progress is very slow and is difficult to disperse new directives since the commitment for these issues is very low.

5.3 Summary – Document Handling

The divisions at Volvo Logistics have in many cases, often due to differences in business activities, worked independently from each other which have led to inconsistency in work procedures between them. They do all have their own processes and tasks but they have also in many cases developed separate solutions for areas where there is no need for this. This is also the case regarding how documents are categorized and stored throughout the company and the lack of shared solutions has led to unnecessary parallel work. The current document handling process is characterized by low prioritization, lack of education, and a lack of clear guidelines.

Chapter 6: Conclusions and Recommendations

This chapter is divided into two parts. The first part presents conclusions and answers to the research questions proposed in the thesis, while the second part takes a more practical approach and presents recommendations for Volvo Logistics in how to handle information distribution, information organization and storage, and document handling in the future.

6.1 Conclusions

This is a two-folded study with focus on information distribution and information organization and storage at Volvo Logistics. For examining these areas a main research question was proposed: *How can Volvo Logistics achieve more coordinated document handling and information distribution processes?*

In turn, in order to answer this question it was complemented with three sub-questions:

- 1) What documents are frequently encountered at Volvo Logistics and what is the current process for document handling?
- 2) What factors are important for Volvo Logistics in order to achieve a more coordinated Information Management process?
- 3) How could information and documents be handled and shared in the future?

These three question function as a basis for the presentation of the conclusions of this thesis and in order to answer them, the study is supported by Choo's (2002) process model of information management and recommendations for document handling from established institutions and organizations. Conclusions made in this study are that the company lacks clear guidelines for document handling and that the existing system for handling and distributing information is not functioning coherently between divisions in the organization. The company has made an attempt to implement an information system for distribution of information and codified procedural knowledge. However, the success of this implementation varies between divisions which have led to an uncoordinated information management process. This has in turn also lead to a situation with uncoordinated document handling procedures throughout the organization.

6.1.1 What documents are frequently encountered at Volvo Logistics and what is the current process for document handling?

The study has found that the company encounters large quantities of documents in its daily operations and that these documents essentially can be categorized into four main blocks: *Accounting Material, Agreements, Freight Documents, and Other Transport Documents.*

At present, there are no clear coherent guidelines for how to handle these documents at the company and storing procedures varies between divisions but have in common that a large share of the documents are stored by an external partner, ReCall. The present

routines when it comes to storage time and storage type are presented in more detail in the table in appendix 2.

Moreover, how well the current process for document handling functions varies between divisions. A variation that the study has found to be partly caused by a lack of clear guidelines for document handling, partly by problems in distributing guidelines throughout the organization, and partly by differences in education of employees in document handling. An interesting aspect is that document handling can be concluded to function better in divisions with cross-functional responsibilities and in divisions with clear legal requirements for document handling than in others. Thus, education and knowledge about the importance of document handling can be concluded to be an important factor for how well-functioning the current process for document handling is.

6.1.2 What factors are important for Volvo Logistics in order to achieve a more coordinated Information Management process?

In order for Volvo Logistics to achieve a more coordinated information management process, this study has, with support from Choo's (2002) process model of information management, identified four factors as being especially important:

1. The employees prefer personalization of knowledge in front of codification
2. Practical flaws in the current information system
3. The current information system is perceived as inadequate to meet information needs
4. Differences in education about how the information system functions

First of all, the current strategy for procedural knowledge sharing is in this study interpreted as being characterized by a clash between an informal culture, suitable for a person-to-person approach, i.e. a personalization strategy for knowledge sharing, and an attempt to use a people-to-documents approach and share knowledge via an information system, i.e. a codification strategy. This misfit generates problems in achieving shared processes throughout the company. Furthermore, the system is poorly adapted to the users' preferences, but many of the problems can also be derived from an insufficient system with practical flaws in compatibility, search functions, and usability. Moreover, many of the employees perceive the system to be unable to deliver information adapted to their preferences and work procedures. They describe how the current information distribution does not address their information needs. Nevertheless, the view on how well information distribution works at the company varies between divisions and a root cause to this can be concluded to be differences in the level of education about how the current system functions between divisions. The acceptance for the system and also the use level varies between divisions. It has been found that the existing system is better at fulfilling its purpose in some divisions, even though the practical flaws of the system still is present. Key reasons for these differences have been found to be a variety in the level of education in how the system works and in how well-defined the responsibility for updating the information in the system is between divisions. The researchers of the study concludes that this variety is being partly caused by differences in the purpose of

divisions and partly by a silo-minded organizational structure, factors which in turn further increases the problems with an uncoordinated information management process.

6.1.3 How could information and documents be handled and shared in the future?

When it comes to how information and documents should be stored at Volvo Logistics in the future, this study concludes that there are potential for improvements both when it comes to formulating guidelines for document handling and in how to distribute this information. In order to create more coordinated document handling procedures there is a need for improving all steps in the information management process, and to understand how the different components of the process model are interlinked. How information is handled and shared throughout the company is especially important. Sharing and handling of information has to be done in coherent, easily understandable, methods throughout the company and this question is in this sense closely interlinked with the important factors for achieving a more coordinated information management process discussed in the second sub-question. The study has shown that top management commitment is important for achieving this.

It can be concluded, that clear guidelines for how to store documents would be beneficial for Volvo Logistics to have in place in the future. The company encounters large quantities of documents on a daily basis and do, mainly because of the absence of well-defined guidelines and retention schedules, store a large amount of documents for a too long time. As stated in the advices by NARA presented in the theoretical framework, it is also important to educate employees in record keeping and management in order for the process to be sustainable. This means that there is a potential for cost savings in document storage if clear guidelines are formulated and successfully distributed in the organization. When formulating guidelines for document handling, both operational and legal requirements have to be taken into consideration. As long as the information in the documents is needed in the daily operations, the documents should be stored in-house in an easily accessible manner at the respective responsible department. In the case of Volvo Logistics however, the operational demands are in most cases subordinated the legal and regulatory requirements since these in a vast majority of cases have longer time demands for document storage. The Swedish accounting legislation, “Bokföringslagen”, has the longest retention of the regulatory requirements that comes in to play. Thus, the most important matter when formulating the guidelines is to provide easily interpretable definitions of what documents are regarded as accounting material. Furthermore, the study has found that the Swedish legislators gradually have opened up for more electronically document handling with the purpose of minimizing paper document handling. At present, accounting material only have to be kept in paper format in three years if a digital copy is stored for the required seven years. This fact further increases the potential for future savings in storing costs. Moreover, electronically stored documents are, according to the theoretical framework of this thesis, more easily shared than paper copies via tools like databases and so forth. Therefore, digital document handling is in this respect somewhat better than a regular document handling. However, other aspects might also come into play. For instance, the regulatory environment is

lagging behind the technical development and is unclear regarding storage requirements in some foreign markets where Volvo Logistics is active. Thus, one conclusion is that the benefits of digital document handling are large, and these benefits should Volvo Logistics aim to exploit as long as the respective legislature allows it to be done. But, paper copies do in some cases still have to be kept. However, in the long term the environment is likely to be more favoring towards use of electronic documents. So even though Volvo Logistics in a Swedish context would be able to move towards less paper-intensive work procedures, the environment does not allow for it. Furthermore, it would be beneficiary to evaluate the relationship with the external document storing firm, ReCall. By looking over the current agreements with ReCall, Volvo Logistics has an opportunity to exploit their expertise in the field as well as establishing a mutually beneficial collaboration and thereby move away from the current win-lose situation of today.

6.1.4 The main research question: How can Volvo Logistics achieve more coordinated document handling and information distribution processes?

The document handling processes at Volvo Logistics are in many ways uncoordinated, storage time and methods varies between divisions. The study has found that this partly is caused by a lack of clear guidelines for document handling, partly by problems in distributing guidelines throughout the organization, and partly by differences in education of employees in document handling. Therefore, it can be concluded that the company have to approach these issues in order to achieve more coordinated document handling and information distribution processes. Volvo Logistics has to decide how to store documents in the future and formulate clear guidelines for document handling. Moreover, the current processes for information distribution have to be improved in order to communicate procedural knowledge, such as guidelines for document handling, and thereby achieve more coordinated processes throughout the company. For achieving more coordinated information distribution processes at Volvo Logistics, it is important to adapt information distribution to the user's needs and to educate the employees in how to use the system. Furthermore, the existing system has been found to possess a number of practical flaws which have to be solved to improve usability; otherwise the employees most likely will use alternative methods for finding information. In addition to the practical flaws with the current information system, it is important to understand how the different components how the information management process are interlinked in order to achieve a more coordinated information distribution. It is not sufficient to have a good information system in place if the information in the system not is adapted to user needs. In the same way it is not sufficient to formulate good guidelines if the system used for distributing them is associated with so many flaws that the intended receivers avoid using the system.

Based on the answers of these three sub-questions, it can be concluded that for answering the main research question the following aspects have to be taken into consideration:

Document handling:

- Formulate clear guidelines for document handling
- Educate employees in document handling procedures
- Increase the prioritization of document handling

Information distribution:

- Adapt information distribution to user needs and preferences
- Solve practical flaws in the information system
- Educate employees in how information is distributed in the company

6.2 Recommendations to Volvo Logistics

In the specific case of Volvo Logistics, this study has formulated practical recommendations both for improving the information distribution processes in the company, and for how to formulate a guideline for document handling that can be used in the company. These recommendations are presented in the following sections.

6.2.1 Recommendations for how to improve Information Distribution at Volvo Logistics – Three approaches

Based on the empirical findings and the analysis, this thesis suggests three possible approaches to encounter and manage the four key factors for improving the information distribution at the company:

1. Use a personalization strategy instead of codification
2. Educate employees in the current system
3. Implement a new codification system for procedural knowledge sharing

There are pros and cons with all of these approaches:

6.2.1.1 Personalization instead of Codification

If the company decides to implement the personalization strategy information will be distributed in methods aligned with the preferences of the employees. A positive aspect of using this approach is that information would be distributed in methods that the employees prefer and are used to work with. However, since this strategy is characterized by direct contacts between the provider and receiver of knowledge, by meeting, phone calls, or other media, it would require significant investments in network building within the organization. Moreover, a personalization strategy would not provide the benefits of economies-of-scale in information distribution which can be obtained by using a codification strategy. Thus, an implementation of a personalization strategy is likely to be very costly. Furthermore, a majority of the relevant information at Volvo Logistics consists of procedural knowledge which according to Urgan (2006) is easily codified knowledge.

6.2.1.2 Educate the employees in the current system

The current system has the obvious advantage of already being in place and wide-spread in the organization. Descriptions of a majority of the company's processes and work procedures are already in place in the system. Furthermore, the system functions well and fulfill its purpose in some parts of the company, i.e. where documents are continuously updated and where employees are educated in how the system works. Another benefit with this approach is that, as previously stated, the codification strategy is suitable for distribution of procedural knowledge. By using codification of procedural knowledge the company can achieve benefits from economies-of-scale in information distribution and it also increases the possibilities for achieving more a more coordinated information management process. But in order for this approach to reach its full potential the problems with existing system need to be dealt with. The practical problems with outdated documents, usability, and problems in finding sought after documents in the system must be solved in order to make it to an information channel that employees find useful in their daily work. Moreover, employees must perceive that the information in the system corresponds to their information needs. Thus, in order to make this approach viable, investments have to be done in educating employees in all divisions in how to use the system and to scrutinize the posted documents in order to ensure that they provide information relevant for the employees.

6.2.1.3 Implement a new codification system for procedural knowledge sharing

The third possibility is to scrap the existing system and introduce a completely new system for distribution of procedural knowledge. This approach would entail all the benefits from having a codification strategy presented in the second approach. It would also provide a possibility to deal with all of the four key factors previously discussed in the analysis. This approach gives the company the opportunity to design a user friendly system adapted to information needs and requirements of its users. If this is done successfully, it is likely that the acceptance for the new system would be high among the employees and thereby it would also be a good tool for information distribution at the company. Hence, this approach is likely to be the alternative with the highest potential for achieving a more coordinated information management process at Volvo Logistics in the long term. However, in order to do this a large change process has to be undertaken. The implementation of a completely new system would bring large start-up costs. A new software platform has to be designed, relevant information have to be transferred to the new system, information need and user preferences have to be examined, and the employees have to be educated in the new system. Thus, this approach entails large costs but also the highest potential for achieving a well-functioning codification system for procedural knowledge sharing.

6.2.2 Recommended approach for improving Information Distribution at Volvo Logistics

The pros and cons with the three approaches are summarized in the following table:

Approach	Pros	Cons
1	<ul style="list-style-type: none"> • Corresponds to user preferences. • Established work method at the company. 	<ul style="list-style-type: none"> • Inefficient for procedural knowledge sharing. • No economies-of-scale in information distribution. • Requires large investments in network building.
2	<ul style="list-style-type: none"> • The system is already implemented. • Processes and work procedures are in place. • Well-functioning in some divisions. • Benefits of economies-of-scale in information distribution. 	<ul style="list-style-type: none"> • Low acceptance by a majority of the employees. • Not user-friendly. • Unclear ownership of documents leading to outdated documents in the system. • Low use rate. • Investments in education are necessary.
3	<ul style="list-style-type: none"> • Opportunity to deal with the four key factors. • Likely to lead to improved usability and thereby higher use rate. • Benefits from economies-of-scale in information distribution. 	<ul style="list-style-type: none"> • Big change necessary. • Large implementation costs. • Long development time is likely to be demanded. • Investments in education are necessary.

Our recommendations when it comes to these three possibilities take their start-off point in the arguments made by Haas and Hansen (2007). They argue that the existence of high quality electronic documents often results in significant timesaving when a person is looking for easily codified knowledge. They also argue that this timesaving exercises a significant and positive effect on work quality. Thus concluding that a firm using high-quality documents for easily codified knowledge will be more likely to deliver high-quality results on time compared to an organization that does not. As the knowledge dealt with in this research is procedural and thereby easy codify, it can be argued that Haas and Hansen's (2007) findings corresponds better with the second and the third approach than with the first. Nevertheless, as presented in the table in the previous page, all three approaches are related with advantages and disadvantages. Therefore, it is tempting to recommend a combination of a personalization and a codification strategy. However, Haas and Hansen (2007) argued that companies emphasizing the wrong strategy or trying to pursue both at the same time can quickly end up in trouble. Thus, a mix between the three is not suitable for the spread of procedural knowledge. Accordingly, our recommendation on how Volvo Logistics can achieve a more coordinated information management process and thereby facilitate the spread of procedural knowledge must only be based on one of the three. The characteristic of the knowledge that needs to be communicated is rather straightforward; it is a guideline for how to store documents. The knowledge is procedural, easy to codify and a large amount of rework and modification of the knowledge is not required as the legislation affecting the storage requirements and thus also the guidelines is seldom altered, updated or changed. Based on these findings and the arguments presented by Haas and Hansen (2007) it seems evident that a codification strategy is preferable. The personalization strategy, characterized by a person-to-person handover of knowledge often requires direct contact between the provider and receiver, either in meetings or by phone. Accordingly, as it involves direct contact, such sharing can be considered inefficient when it comes to the distribution of procedural knowledge. The benefits of reuse and diminishing costs are lost. Moreover, as the personalization strategy requires large investments in network building, the cost of establishing a functioning personalization system within a divisionalized organization such as Volvo Logistics is significantly higher than the potential and rather limited gains. Moreover, time-consuming tasks, in this case the establishing of networks and search-time within it, involve opportunity costs in the form of time that cannot be spent elsewhere (Hansen, Podolny, and Pfeffer, 2001). For these reasons, personalization is not a viable long-term option. This thesis therefore argues that codification is a more suitable strategy to pursue.

Throughout this research, it has become evident that a new information management system has to be established in order to facilitate the spread of procedural knowledge. It is not an option to keep the system in its current state. The employees are not using the existing codification system. Thus, the cost-benefit-ratio of the system is very high. Therefore, this thesis suggests that Volvo Logistics implement an entirely new system if they want to achieve a more efficient procedural knowledge sharing. As seen in the picture in appendix 1. The current information storing and distribution system at Volvo Logistics has so many flaws related to storage that a majority of the employees have

stopped using it. Nevertheless, the costs of server, database management and maintenance are remaining. The efforts of improving the system are mainly coming from central divisions, which presently are sorting out outdated documents by hand – a cumbersome and inefficient way of improving an information system. What’s more, it might not lead to a higher usage-rate among the employees as they can remain unaware of the improvements, simply neglect them or experience other issues, such as user-friendliness, in the information system. However, a companywide education in how to search and share information in the present system together with and a clearer responsibility distribution would improve the procedural knowledge sharing through the information system significantly. Nevertheless, such an education would be costly and the outcome highly uncertain. Moreover, the semi-finished implementation of current information system stemming from that one of the key persons behind the implementation of the use of process maps left the company before the transformation of the system was fully developed and implemented. This has resulted in an inefficient system that has made individuals perform activities based on their previous experience and knowledge, which has caused problems at Volvo Logistics. The organization has foregone advancements in technology and work processes leaving the system even further outdated. This chain of events is in accordance with what Martinsson (2010) described. The outdated system does not correspond to the way people are used to acquire information in their daily lives today and it will therefore not be used. This development will put the system in a vicious circle where it will be even less updated, more outdated, less used and so forth.

Thus, in the long-term one option is preferable when it comes to information distribution. That is Approach 3, to implement a new codification system for procedural knowledge sharing in order to achieve a more coordinated information management process. It might seem somewhat radical to change the entire system, but the findings in this research indicate that drastic means are indeed necessary. The quality of the documents within the system is very low, a fact that in combination with the other practical flaws of the system contradicts the very foundation of a successful codification strategy (Haas and Hansen 2007).

Figure 4 – Codification of Procedural Knowledge



The picture above illustrates how Volvo Logistics can use codification of procedural knowledge for achieving improved financial outcome. Procedural knowledge is suitable for codification and standardization. The standardized knowledge is easily distributed and if standardization of knowledge becomes a routine several opportunities for efficiency gains can be exploited. In turn, this will most likely lead to cost reductions in information distribution.

6.2.2.1 Short term, medium term, and long term recommendations for Information Distribution

To summarize, the recommendation of this thesis when it comes to information distribution is that Volvo Logistics should approach the situation step-wise. Firstly, employees must be educated in how information is distributed in the company; both in how information is contributed and retrieved from the existing system. Moreover, education in how to keep information in the system up-to-date is necessary and thus is also clearly defined responsibilities for doing this essential. Secondly, the company should, due to the practical flaws of the existing system, consider the possibility to design a new system. If a new system is designed the company gets an opportunity to construct a system which is better adapted to preferences of the supposed user. However, during this process the first step, to educate people in the existing information system, will still be of utmost importance since it has to function well while the new system is constructed. The long-term step is to implement the new system. During the implementation phase, the new information system will have to run in parallel with the old system until it can be ensured that potential design flaws are minimized.

Time frame	Recommendations for Information Distribution
Short term:	Educate employees in how to use the system
Medium term:	Design a new information system adapted to user preferences
Long term:	Implement a new information system

6.3 Recommendations for Document Handling at Volvo Logistics

As stated in JISC and ISO, there is no such thing as a “one size fits all” specification for what is required to ensure good document handling routines in every organization. Thus, it could argue that Volvo Logistics would not benefit or could not obtain a unified document handling routine, due to the differences in operational and legal requirement surrounding the different departments. This research has taken these facts into consideration by presenting guidelines mainly based on the regulatory environment that affects all of the departments equally, i.e. the Swedish accounting legislation, “Bokföringslagen”. By using this approach and not take every division’s unique requirements into consideration at an initial stage, a general guideline applicable to all divisions has been developed.

When it comes to document handling, an essential question is how information and documents should be organized and stored. As described in the theory section information should be managed and kept in ways corresponding to the internal business needs, enabling the organization to defend its rights and interests, enabling the content to be used and controlled in an efficient manner, and is compliant with all regulatory and statutory requirements.

The study has found that the regulatory and statutory requirements are the most important factor when it comes to document handling in the case of Volvo Logistics. This is the case since the requirements in the Swedish accounting legislation, “Bokföringslagen”, are those with the longest time demands for retention of documents. The law states that information classified as accounting material should be kept for at least seven years which is a longer time demand than the found operational requirements. Moreover, other legislations do also have time demands which of course need to be taken into consideration. For example, the custom legislation has a retention demand for 1+5 years for documents related to imports and exports. However, since “Bokföringslagen” has the longest storage requirements for documents, it can be concluded that the most important question in this case is how to define what documents that are seen as Accounting Material. The legislation does not take any specific documents into consideration but do instead present a number of requirements that have to be fulfilled for each accounting entry. These requirements are:

- When was the transaction and verifying document compiled?
- When did the business transaction occur?
- What was included in the business transaction?
- What was the monetary amount of the transaction?
- What counter-part was involved?
- If there are any other documents or information providing a foundation for the business transaction - where are these stored?

Hence, a key recommendation of this thesis is to use these questions a base for the determination of how whether a document is accounting material or not. If the original accounting material, normally the invoice, has to be complemented with additional information to be able to answer the questions below and thus fulfill the requirements in “Bokföringslagen” that document must be considered accounting material.

Guideline 1:

Type of document (if considered accounting material)	Storage type	Time⁵
Accounting material	In the form it arrived	1+7 years
Freight Documents	In the form it arrived	1+7 years
Agreements	In the form it arrived	>1+7 years
Other transport documents	In the form it arrived	1+7 years

⁵ 1+7 years means the current year plus seven years

Guideline 2: If no other documents than the invoice are necessary to fulfill the requirements in “Bokföringslagen” other retention requirements come into play. For example, customs documents should be stored 1+5 years in accordance with “Tullagen”:

Type of document	Storage type	Time ⁶
Accounting material	In the form it arrived	1+7 years
Freight Documents	In the form it arrived	1+3 years
Agreements	Electronic documents in all situations where the legislature does not require personally signed agreements.	As long as they are needed for the operations
Other transport documents	In the form it arrived	As long as they are needed for the operations
Customs documents	In the form it arrived	1+5 years

The current deal with ReCall needs to be looked at, the current situation and collaboration is far from optimal as it includes contradicting interests. Currently, it seems as ReCall benefits more from an inefficient documentation handling process than Volvo Logistics, but there could be benefits for both parts by making it more efficient. A recommendation is to give ReCall incentives to strive for providing Volvo Logistics with as efficient document handling as possible in the agreement. In addition, it is likely that ReCall possess the required expertise to assist Volvo in getting a more efficient handling routine. Consequently, Volvo Logistics would benefit from the potential advice and learning opportunities provided by expertise personnel at ReCall. However, as long as the contract between the parties favor non-collaborating behavior, the potential benefits will be difficult to obtain. A new contract can be designed in many different ways, but the researcher would like to advise that it supports mutual gains and co-creation of value, for instance via a pay-for-performance agreement.

6.3.1 Short term, medium term, and long term recommendations for Document Handling

The recommendation of this thesis when it comes to document handling is that Volvo Logistics should follow the steps presented in the table below. First of all, the company must decide how the different document types should be stored and then formulate and implement a guideline ensuring that coherent routines are followed. Secondly, the relationship with the external document storing firm, ReCall, should be looked over in order to ensure that all documents are stored as beneficial as possible for Volvo Logistics. In the long term, the overall benefits of the use of digital documents cannot be neglected. According to the findings of this study paper document handling should be avoided to an as large extent as possible due to that paper intensive work both is costly and hampers efficient information distribution.

⁶ 1+7 years means the current year plus seven years

Time frame	Recommendations for Document Handling
Short term:	Implement a general guideline for document storing
Medium term:	Look over, and if necessary, reformulate the agreements with ReCall
Long term:	Examine the possibility to fully implement electronic document storing

The regulatory prerequisites in laws, regulations, or agency directives providing general and specific guidance on particular records to be created and maintained by an agency will provide the foundation for the guidelines presented in this research. Every organization is legally obligated to create and maintain adequate and proper documentation of its organization, functions, and activities (Disposition of Federal Records). Thus, the guidelines will constitute a vital part in Volvo Logistics compliance commitment. An organization should provide adequate evidence of its compliance with the regulatory and operational environment in the records of its activities. A records retention schedule (such as the herein presented guidelines) acts as an organization's safe harbor in case of lawsuits or legal claims. Thus, the Risk Management division for example should be allowed to keep records as long as the information is relevant for their work. Moreover, organizations that have implemented a documented retention schedule can demonstrate a good faith effort when disposing of records. (DeSilva & Vednere 2008c).

Chapter 7 - Further Research

This study has examined information distribution and document handling processes at Volvo Logistics by using a theoretical framework based on Choo's (2002) process model of information management. It has been concluded that a change in both of these aspects is necessary in order to improve the processes. Furthermore, suggested solutions to these issues have been presented. Thus, future studies could examine how to turn these suggestions into reality; suitable focus could for example be on change management and accompanied barriers towards change and how to design a new information management system. Other interesting topics for further research in the case of Volvo Logistics would be to study how the company manages the other components in the process model of information management in more detail. Since, Choo states that all these components are closely interlinked it would be in the company's interest to look over all of them in more detail.

Moreover, this thesis has found the silo-minded organizational structure of Volvo Logistics to have an important effect on its information management processes. The framework suggested by Choo (2002), gives some attention to how different organizational structures affects the information management processes of organizations. Therefore, a suitable recommendation for further research would be to study how different type of organizational structures affects information management processes, and examine how Choo's model can be applied on organizations with different levels of structural complexity.

Another interesting topic for further research is to conduct a more thorough examination of the regulatory frameworks related to document handling. This is interesting since it has been found to be a significant source of questions at Volvo Logistics and thereby causing issues in the daily work.

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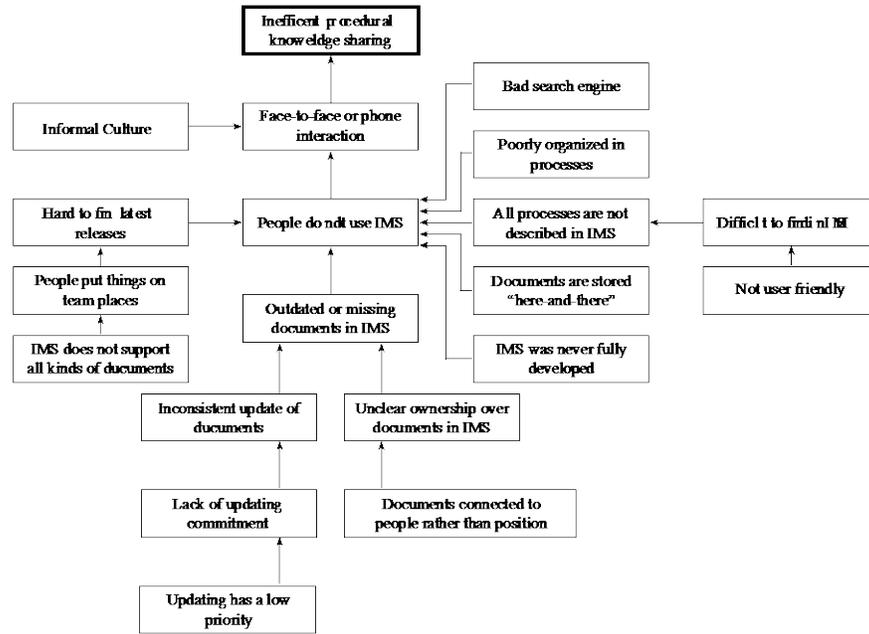
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Appendix 1 - Reasons to why the current Information Management System (IMS) does not work



Appendix 2 - Mapping of frequently encountered documents and their storage

Other transport documents			
Divisions (GBO and GBF)	Documents	Storage type	Time (in years)
Outbound	Offers Orders VCR	Electronically Electronically	Undefined
Inbound	POC VTD POD POC/VTI Transit documents (Import) Dangerous goods declarations Intrastat reports Deviation reports Booking verifications Customs declaration	Electronically (ATLAS) Electronically No good system Electronically (ATLAS) Electronically (ATLAS) Electronically Electronically Paper format Paper format	1+10 1+10 1+10 1+10 ⁷ Undefined Undefined 1 > 1 1+3 1+6
Emballage	Packaging Lists Customs Invoice Storage lists	i)Paper ii)Electronically Electronically Paper	i) 1 week ii)Undefined
Purchasing			
Risk Management			
Customs	Country of origin	Mostly Paper, some electronically	>1+5
CBS			
VBS			
ICC	Depreciation	Paper	3+10
Accounting material			
Divisions (GBO and GBF)	Documents	Storage type	Time
Outbound	Invoices Verifications	Paper and electronically Same as a)	1+7 1+7
Inbound	Forwarding overseas: i) Samba, Brazil ii) Kaluga iii) Eaton iiii) USA	i) Electronically ii) Electronically iii) Electronically iiii) Electronically i) Electronically	i) 1+10 ii)1+10 iii) 1+5 iiii)1+2 i) 1+10

⁷ Inconclusive answers for POC, VTD, POD, and POC/VTI: in this case these are assumed to be accounting material.

	Invoices i) POC		
Emballage			
Purchasing			
Risk Management	Invoices Risk reports Damage reports Insurance certificate	Paper format Paper format Paper format Paper format	2+8 2+8 2+8 2+8
Customs	Invoices	Paper	1+7
CBS	Verification Booking orders General Voucher	Electronically Electronically Electronically	1+10 1+10 1+10
VBS	Invoices including specifications	Paper	1+7
ICC	Invoices including specifications	Paper	1+10
Agreements (How they do it currently)			
Divisions (GBO and GBF)	Documents	Storage type	Time
Outbound	Contacts Ramavtal	Paper and teamplace	Undefined – but at least as long as valid
Inbound	Master Agreement i) Service Level Agreement (SLA)	Paper i) Paper and teamplace	Undefined – but at least as long as valid
Emballage	Master Agreement Service Level Agreement (SLA) User Agreement Payment Agreement	Paper Paper Paper and electronically Paper and electronically	Ceased+1 Ceased+1 Ceased+1 Ceased+1
Purchasing	Contract Transport agreements	Paper and electronically (VOLTA) Paper and electronically (VOLTA)?	Forever
Risk Management			
Customs			
CBS			
VBS			
ICC	Contracts Agreements	Paper Paper	Undefined Undefined
Freight documents (How they do it currently)			
Divisions (GBO and GBF)	Documents	Storage type	Time
Outbound	CMR	Paper format (the copy)	10

	CIM	Paper format (the copy)	10
	B/L	Paper format (the copy)	10
	AWB	Paper format (the copy)	10
Inbound	Avsändning	Paper format (the copy)	3
	CMR	Paper format (the copy)	3
	CIM	Paper format (the copy)	3
	B/L	Paper format (the copy)	3
	AWB		
Emballage	Info of CMR	Electronically	1.5 then IT
	Info of CIM	Electronically	1.5 then IT
	Info of B/L	Electronically	1.5 then IT
	Info of AWB	Electronically	1.5 then IT
	Info of PMR	Electronically	1.5 then IT
Purchasing			
Risk Management			
Customs	CMR	Paper format	1+5
	CIM	Paper format	1+5
	B/L	Paper format	1+5
	AWB	Paper format	1+5
CBS			
VBS			
ICC			

The mapping might be subject to smaller deviations at some sub-divisions.

Appendix 3 - Original selections from the Swedish accounting legislation

Svenska Bokföringslagen (1999:1078)

1 kap. Inledande bestämmelser

2 § 8. räkenskapsinformation:

- a) sådana sammanställningar av uppgifter som avses i
- 4 kap. 3 § (balansräkning),
 - 5 kap. 1 § (grundbokföring och huvudbokföring),
 - 5 kap. 4 § (sidoordnad bokföring),
 - 5 kap. 6 § (verifikation),
 - 5 kap. 7 § (handling m.m. som en verifikation hänvisar till),
 - 5 kap. 11 § (systemdokumentation och behandlingshistorik),
 - 6 kap. 2 § (årsredovisning),
 - 6 kap. 4 och 5 §§ (årsbokslut),
 - 6 kap. 6 § (förenklat årsbokslut), samt
 - 6 kap. 8 § (specifikation av balansräkningspost),
- b) avtal och andra handlingar av särskild betydelse för att belysa verksamhetens ekonomiska förhållanden, samt
- c) sådana uppgifter i övrigt som är av betydelse för att det ska gå att följa och förstå de enskilda bokföringsposternas behandling i bokföringen,

5 kap. Löpande bokföring och verifikationer

Verifikationer

6 § För varje affärshändelse ska det finnas en verifikation. Om företaget har tagit emot en uppgift om affärshändelsen i den form som anges i 7 kap. 1 § första stycket, ska denna uppgift, i förekommande fall kompletterad med uppgifter enligt 7 och 8 §§, användas som verifikation.

Om det behövs med hänsyn till arten av den mottagna verifikationen, får bokföringen grundas på en särskilt upprättad hänvisningsverifikation.

Flera likartade affärshändelser får dokumenteras genom en gemensam verifikation. Vid försäljning av varor och tjänster mot kontant betalning får även inbetalningarna under en dags försäljning dokumenteras genom en gemensam verifikation. Den gemensamma verifikationen får då utgöras av uppgifter från en kassaapparat, kassarapport eller annan uppgift som anger summan av mottagna betalningar. *Lag (2010:1514).*

7 § Verifikationen skall innefatta uppgift om när den har sammanställts, när affärshändelsen har inträffat, vad denna avser, vilket belopp den gäller och vilken motpart den berör. I förekommande fall skall verifikationen även innefatta upplysning om handlingar eller andra uppgifter som har legat till grund för affärshändelsen samt var dessa finns tillgängliga.

I verifikationen skall det ingå ett verifikationsnummer eller annat identifieringstecken samt sådana övriga uppgifter som är nödvändiga för att sambandet mellan verifikationen och den bokförda affärshändelsen utan svårighet skall kunna fastställas.

7 kap. Arkivering av räkenskapsinformation m.m.

Former för bevarande

1 § Räkenskapsinformation skall bevaras i

1. vanlig läsbar form (dokument),
2. mikroskrift som kan läsas med förstoringshjälpmedel, eller
3. annan form som kan läsas, avlyssnas eller på annat sätt uppfattas endast med tekniskt hjälpmedel (maskinläsbart medium) och som genom omedelbar utskrift kan tas fram i sådan form som avses i 1 eller 2.

Dokument, mikroskrift och maskinläsbart medium med räkenskapsinformation som företaget har tagit emot från någon annan skall bevaras i det skick materialet hade när det kom till företaget. Dokument, mikroskrift och maskinläsbart medium med räkenskapsinformation som företaget självt har upprättat skall bevaras i det skick materialet fick när räkenskapsinformationen sammanställdes.

Tid och plats för förvaring

2 § Dokument, mikroskrift och maskinläsbara medier som används för att bevara räkenskapsinformation ska vara varaktiga och lätt åtkomliga. De ska bevaras fram till och med det sjunde året efter utgången av det kalenderår då räkenskapsåret avslutades. De ska förvaras i Sverige, i ordnat skick och på betryggande och överskådligt sätt.

Maskinutrustning och system som behövs för att presentera räkenskapsinformationen i den form som anges i 1 § första stycket 1 eller 2 ska hållas tillgängliga i Sverige under hela den tid som anges i första stycket. *Lag (2010:1514).*

Överföring av räkenskapsinformation

6 § Ett företag får förstöra sådant material för bevarande av räkenskapsinformation som avses i 1 §, om räkenskapsinformationen på ett betryggande sätt överförs till något annat sådant material. Om materialet är sådant som avses i 1 § andra stycket, får det dock förstöras först från och med det fjärde året efter utgången av det kalenderår då räkenskapsåret avslutades. *Lag (2010:1514).*

FAR Samlingsvolym 2012, BFNAR 2000:6, verifierationer

16. Verifikationen ska innefatta uppgift om:

när den sammanställts,

när affärshändelsen har inträffat,

vad denna avser,

vilket belopp den gäller och

vilken motpart den berör, samt ska i förekommande fall även innefatta upplysning om handlingar eller andra uppgifter som har legat till grund för affärshändelsen samt var dessa finns tillgängliga

Original selections from the Swedish customs legislation

Svenska Tullagen (2000:1281)

3 kap. Införsel av varor m.m.

5 § Den som enligt artikel 14 i förordningen (EEG) nr 2913/92 är skyldig att förse en tullmyndighet med handlingar, ska bevara dessa i fem år eller den längre tid som för vissa uppgifter eller handlingar kan vara föreskriven i annan lag eller författning.

Den som har fått ett enhetstillstånd av Tullverket är skyldig att förvara sådana handlingar, som avses i första stycket och som hänför sig till den verksamhet som tillståndet omfattar. Handlingarna ska förvaras i Sverige i ordnat skick samt på ett betryggande och överskådligt sätt. Om informationen förvaras i sådan form att den endast kan läsas med tekniskt hjälpmedel ska utrustning och system som behövs för att omedelbart skriva ut informationen i läsbar form finnas tillgängliga. *Lag (2010:102)*.

Appendix 4 - Different types of agreements

The customer agreements can be separated into two other parts:

Large customers

Small customers

The customers are assigned the following contracts:

Master Agreement (Large customers only)

The Master Agreement shapes general terms such as payment etc. of the collaboration. The Master Agreement provides the foundation for future and more specific sub-contracts. The Master Agreements are sometimes unique to each GBO and only affect the relationship between the specific Volvo Logistics (VLC) division and its customer. In contrast, sometimes the Master Agreement stipulates the features for all of the divisions at VLC and its customers.

Service Level Agreement (Large customers only)

An SLA determines the level of service that should be provided by VLC. One example is found at the Emballage division who sometimes pick-up a cleaned and folded packaging at the customer and sometimes has to do the cleaning and folding themselves. In short, this is not a legal document and is only shaping the operational parts of the agreement.

User Agreement (UA)

The User Agreement is unique to the Emballage division and is a standard contract written with each of the customer's factories and is specifying how much packaging material it is allowed to have. The UA's are signed with both smaller and larger customers.

“It is like a normal personal bank account, the balance is changed every time packaging is sent or received.”

Payment Agreement (PA)

The payment agreements regulate the payment streams and if there are any special conditions to the standard agreement. In some cases, a customer might prefer to pay the flows of his or her suppliers as well as it results in a more lean flow of payment. The payment agreements arrive in different format, sometimes in original and sometimes as a copy and they are nowadays scanned and stored in electronic and paper format. The PA's are signed with both smaller and larger customers.

Add-on Services

Shape the conditions for extra or additional services.

Appendix 5 - Interview Guide

Main objective:

Find out:

- 1) Which type of documents that exist
- 2) How they are stored today
- 3) Why they use the specific method
- 4) What they are used for
- 5) Need for daily access to these documents
- 6) What regulations that affects the storage
- 7) How do they work today
- 8) Why do they work in that specific way
- 9) How is the information management system integrated in the daily operations

First, describe the expected outcomes of the project, emphasizing the benefits to the organization (for example, savings in money and staff time used in storing, retrieving and locating records)

The intended outcome of the master's thesis is to evaluate what information need to be stored and how Volvo Logistics should store it in accordance with laws and regulations, from a security perspective, and for easy access for the users of the system. The aim of this thesis is to:

1. Map different laws and regulations for information storage, both for electronic and paper documents. This should be done with regard to storage time, accessibility and security.
2. Map different operational requirements, needs for accessing information, both mappings should be done by contacts with various stake holders, such as various functions within Volvo Logistics, other companies within the Volvo Group and external auditors.
3. The thesis should investigate the different ways to store data both electronically and physically.
4. Develop instructions for employees what and how to store information.

Indicate that interviewees have been selected because of their knowledge of the structure, functions and business activities of the organization, as well as their understanding of the organization's information needs.

Interview guide (adapted from interview guide DIRKS September 2001):

Background

1. Role of the person
 - What are the core areas of responsibility of the organization?
 - How long have you been working at VLC?
 - What is the role of your division
2. What functions, activities and transactions does your operational area undertake?

- How does these fit into the overall purpose and structure of the organization
- Do you interact with other areas of the organization in carrying out these business activities?

Document Handling

3. What types of documents are most frequently encountered at your division?
 - Shipping
 - Accounting/Finance
 - Agreements
 - Others
4. How are the documents stored today?
 - Why do you do it in this way
 - Are there any legal or other recordkeeping requirements relating to the records?
 - Storage time
 - Accessibility
 - Security
 - Are any of these documents stored electronically?
5. Where are your records stored?
 - What disposal authorities do you have that cover records produced in the course of current and (if appropriate) historical business activity?
 - Do you have a planned disposal program?
6. How long the records you create are needed to support the business activities of your organization?
7. Can you identify any other uses your records may have, other than for the provision of evidence of work undertaken? (i.e. can the information be used for other purposes?)
8. Do you consider the current process to be efficient?
 - Are there any guidelines of how to store documents today?
 - What, if anything, would you like to change?
9. Do you experience the document handling a problem?
 - If you are insecure of how to store documents, what do you do?
 - If you want to find a document, do you know how and where to find it?
 - Are there any needs to access the stored material again, and if so, is the current system good?
10. Are there any cross-functional cooperation with regards to document handling?

11. Are there any central rules from Logistics or Volvo Group in general?
 - Does Volvo follow any standards, such as, ISO 15489?
 - Do you have any specific archiving guidelines for your division?
 - What do they look like? Formalized/Written?
 - Do these policies cover all record formats (e.g. paper, electronic including email)?
 - Do you follow these directions?
 - Why/Why not?
 - Are the procedures regularly reviewed and is staff trained in their use?
 - Does your organization perform regular recordkeeping audits?

12. How does the organization handle its external compliance regime?
 - Do you store any data electronically?
 - How often do you have to access stored documents?

Practical recordkeeping (thoughts and intuitions)

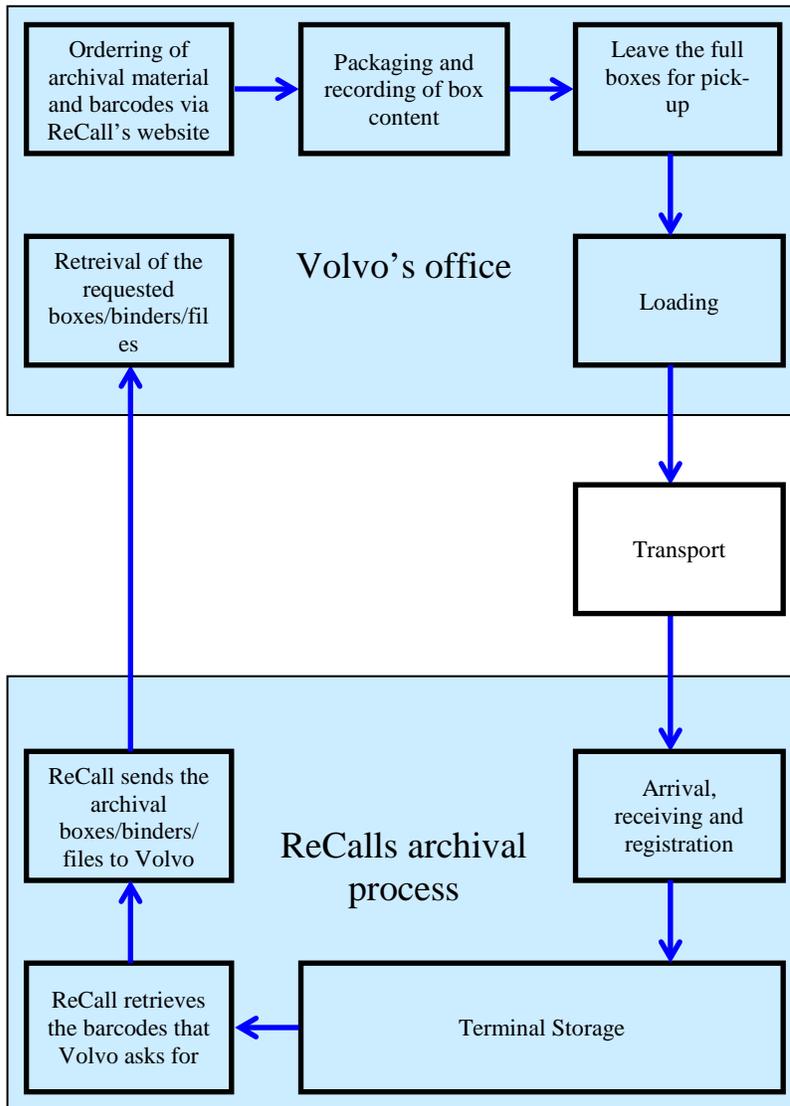
13. Are recordkeeping responsibilities dispersed throughout the organization?
14. What level of recordkeeping awareness and competency does most staff have to meet the organization's work requirements?
15. Does the organization have difficulty producing records when they are required (e.g. for litigation, audit, ministerial or parliamentary briefing, freedom of information requests)? If so, why do such difficulties occur?
16. What levels of prominence, resources and support from management do the staffs responsible for recordkeeping have within the organization?

Information Management System

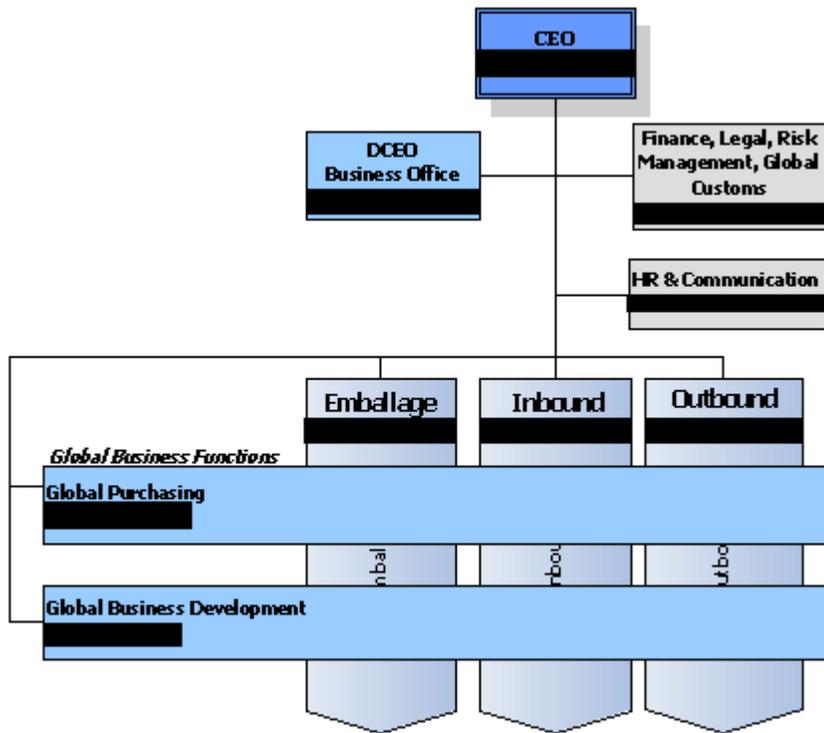
17. Do you have a common information management system?
18. Are there any flaws in the information management system?
19. When you encounter a problem, how do you go about to solve it?
20. Do you use the information management system on a regular basis for finding information?
 - It is working well for your operations and division?

Do you use the information management system on a regular basis for finding information on how to store and retrieve documents?

Appendix 6 - Current document handling routine at ReCall

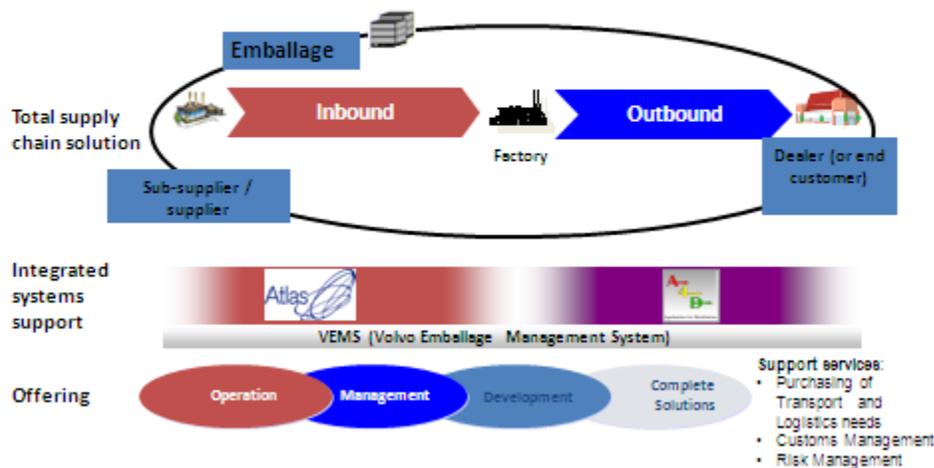


Appendix 7 - Organizational structure before restructuring



At present, Volvo Logistics can best be described as a matrix organization with line responsibilities organized around three core activities, packaging, inbound transportations, and outbound transportations. These three are internally referred to as the Global Business Operations (GBOs) Emballage, Inbound, and Outbound, which can be seen as functioning as independent companies within Volvo Logistics. In addition, there are three Global Business Functions which carry out cross-functional tasks that all of the GBOs encounter; invoicing, purchases, risk management, financial and business control and so on.

VLC is a unique actor with complete logistics offerings



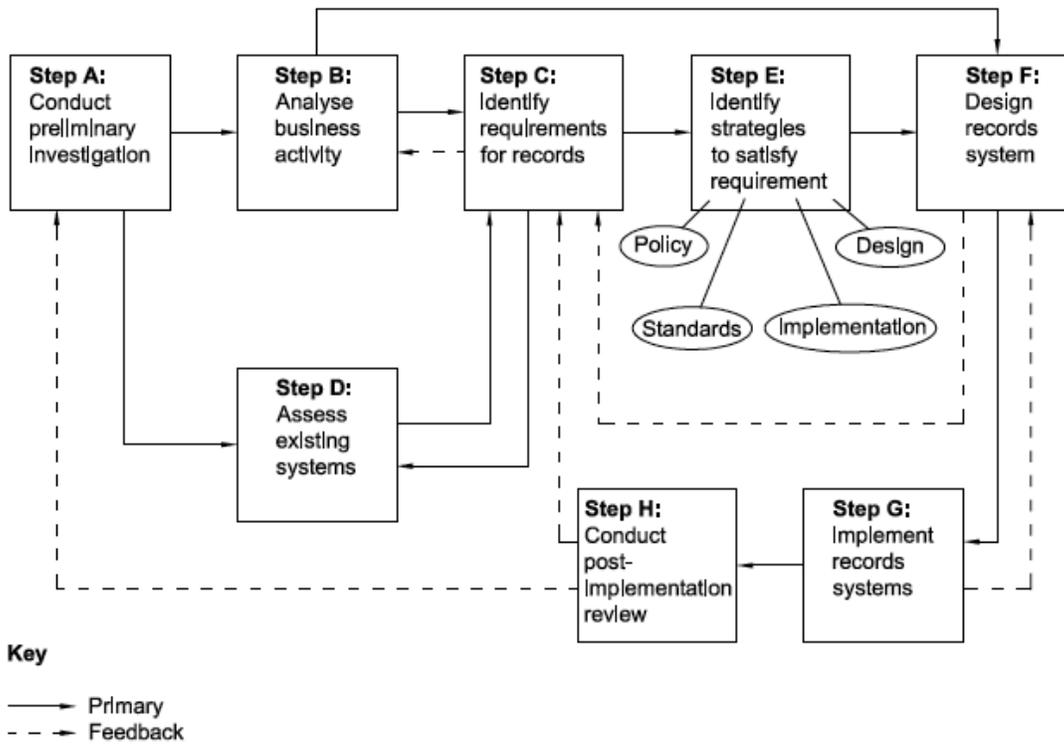
Briefly, Emballage can be described as being responsible for providing packaging solutions and systems for all activities pursued by Volvo Logistics and its suppliers.

The main task of Inbound is to handle incoming transports from material suppliers to the factories of the customers of Volvo Logistics but in excess of that, the scope of Inbound's business activities also includes some Outbound-processes like the distribution of Volvo Penta's boat engines to final customers and dealers. It can be described as that Emballage is responsible for providing Inbound with packaging that they can use when distributing material into their customer's factories.

Outbound, on the other hand, has the responsibility for transporting finished products on wheels i.e. trucks, buses, cars, and construction vehicles from Volvo Logistics' customer's factories to their final customers, mainly automotive dealers.

The three Global Business Operations are accompanied with two supporting Global Business Functions: Global Purchasing and Global Business Development which have cross functional global responsibilities within their respective fields. Moreover, Volvo Logistics also contains other supporting units with cross-functional responsibilities like HR & Communication, Finance, Legal, Risk Management, and Global Customs. All the supporting functions at Volvo Logistics are similar to the three Global Business Operations in that they have their own processes, routines, and instructions regarding Information Management and how to store documents.

Appendix 8 - Methodology for Design and Implementation of Records Systems from National Archives of Australia and State Records of New South Wales



(Source: National Archives of Australia and State Records New South Wales.)

Figure 1 — Design and Implementation of Records Systems (DIRS)

Appendix 9 - Guidelines for future document handling

The most important question concerning document handling is to decide what is regarded as accounting material.

If a document provides enough information to fulfill the requirements in "FAR Samlingsvolym 2012, BFNAR 2000:6, verification", there is no need to store any other than that specific document, normally an invoice. On the other hand, if the invoice in itself cannot fulfill these requirements, it has to be complemented by other documents until these questions can be answered:

- When was the transaction and verifying document compiled?
- When did the business transaction occur?
- What was included in the business transaction?
- What was the monetary amount of the transaction?
- What counter-part was involved?
- If there are another documents or information that is providing a foundation for the business transaction - where are these stored?

If a document cannot be considered accounting material then it should be retained in accordance with its associated rule respectively. For example, customs documents should be stored 1+5 years in order to fulfill the requirements in the Swedish customs legislation, "Tullagen". In those cases, i.e. where documents not are considered as accounting material, the thesis recommends Volvo Logistics to use the following guideline:

Storage routines for documents that <u>cannot</u> be considered accounting material		
Type of document	Storage type	Time⁸
Accounting material	In the form it arrived	1+7 years
Freight Documents	In the form it arrived	1+3 years
Agreements	Electronic documents in all situations where the legislature does not require personally signed agreements.	As long as they are needed for the operations
Other transport documents	In the form it arrived	As long as they are needed for the operations
Customs documents	In the form it arrived	1+5 years

Storage routines for documents that <u>can</u> be considered accounting material		
Type of document	Storage type	Time

⁸ 1+7 years means the current year plus seven years

Accounting material	In the form it arrived	1+7 years
Freight Documents	In the form it arrived	1+7 years
Agreements	In the form it arrived	>1+7 years