



Virve Pukki

Integrating Document Management with Business Processes through Service Management

Metropolia University of Applied Sciences

Master of Engineering

Industrial Management

Master's Thesis

April 29 2024

Preface

This study represents a significant milestone in my academic path expanding my educational and professional knowledge and practical skills in industrial management. It has been an exciting journey exploring a topic that I am deeply passionate about. I extend my gratitude to the Case Company for getting this opportunity and for their interest and commitment to improving business operations through document and information management.

My special thanks to the study supervisors, Dr. Sami Sainio, Dr. Thomas Rohweder, M.A. Sonja Holoppa, and Dr. James Collins for the support and invaluable guidance provided throughout the journey of this thesis. Their expertise, encouragement, and constructive feedback have been crucial for developing and refining this work.

I would also like to extend my heartfelt thanks to my colleagues, whose support and collaboration have enriched my academic experience. The exchange of ideas and perspectives has been essential in refining my understanding and approach to the subject matter. My special thanks to Miia Satomaa for her exceptional mentoring and support. I am deeply grateful for her commitment to excellence, which has enriched the quality and depth of this research.

Last but certainly not least, I am deeply grateful to my family, especially to my husband, for their love, encouragement, and support. Their belief in my abilities has been a constant source of strength and motivation, pushing me forward even in the face of challenges.

Espoo, 29.04.2024

Virve Pukki

Abstract

Author: Virve Pukki
Title: Guidelines to Improve the Document Management Processes of the Case Company
Number of Pages: 75 pages
Date: 29 April 2024

Degree: Master of Engineering
Degree Programme: Industrial Management
Specialisation option: Name of the specialisation option
Instructor(s): Sami Sainio, Principal Lecturer
Sonja Holappa, M.A., Senior Lecturer

This study focuses on improving the document management process within the Case Company. Its primary aim is to integrate document management seamlessly into the organization's business processes, clarifying the scope and responsibilities of document management through the ITIL service management framework.

Utilizing the applied action research method involved gathering data through stakeholder interviews, studying relevant literature, and validating findings through workshops. During the Current State Analysis, various weaknesses were identified in the existing document management process, which led to the recognition of three main root causes impacting the entire process. To address these root causes, best practices and ideas were collected during the Literature Research.

To improve the integration of document management with business processes and to clarify the scope of documents to be managed and the associated responsibilities, guidelines were developed and presented for validation and further implementation within the company.

Overall, this study provides a comprehensive understanding of the relationship between document management and business processes and service management principles. By addressing these key areas, the study presents ideas and proposals for effectively utilizing document management to improve organizational efficiency and effectiveness.

Keywords: Document Management, Process integration, Information Management, Business needs identification, Service Management

Contents

1	Introduction	1
1.1	Business Context of the Case Company	1
1.2	Business Challenge, Objective, and Outcome	2
1.3	Scope and Outline of Thesis Report	2
2	Project Plan	3
2.1	Research Approach	3
2.2	Research Design	4
2.3	Data Collection Plan	6
3	Current State Analysis of the Document Management Process	9
3.1	Overview	9
3.2	Description and Analysis of the Current Process	10
3.2.1	Process Input	11
3.2.2	Initiate	11
3.2.3	Edit	12
3.2.4	Store	12
3.2.5	Review and Approve	13
3.2.6	Use	14
3.2.7	Revise	14
3.2.8	Archive and Destroy	15
3.2.9	Document Management System	15
3.3	Summary of Findings	16
3.4	Key Findings to Study Further	18
3.4.1	Root causes	18
4	Improvement Ideas from Relevant Literature	21
4.1	Improve Process Integration	21
4.1.1	Context of Document Management Process	22
4.1.2	Context of operational process	24
4.1.3	Developing Service Management	25
4.2	Clarify the Scope	29
4.2.1	Developing process flow charts	30
4.2.2	Developing business analysis	31
4.3	Clarify Responsibilities and Relationships	32

4.3.1	Developing service catalog management	33
4.3.2	Developing relationship management	34
4.3.3	Develop organisational governance	36
4.4	Conceptual Framework	37
5	The Initial Guidelines to improve the document management process	39
5.1	Overview	39
5.2	Guidelines to improve document management process as a service	40
5.2.1	Input phase	42
5.2.2	Initiation phase	45
5.2.3	Editing phase	48
5.2.4	Review and Approval phase	50
5.2.5	Storing phase	52
5.2.6	Usage phase	54
5.2.7	Revising phase	56
5.2.8	Archiving and Destroying phase	57
5.2.9	Document Management System	59
5.3	Summary of the Initial Guidelines	61
6	Validation of the Initial Guidelines	63
6.1	Overview	63
6.2	Feedback received from the Initial Guidelines	64
6.3	Summary of the Final Guidelines	65
7	Discussion & Conclusions	67
7.1	Executive summary	67
7.2	Recommendations for next steps	69
7.3	Self-evaluation of thesis project credibility	73
7.4	Closing words	74

List of Figures

Figure 1. Research Design of the Study	4
Figure 2. The Data Collection Plan of the Study	6
Figure 3. Current document management process	10
Figure 4 Selected weaknesses to focus for further study.....	19
Figure 5 Knowledge management pyramid (Rhem, 2022).....	23
Figure 6 The ITIL Service Value System (AXELOS, 2019).....	26
Figure 7 ITIL Service Management building blocks (AXELOS, 2019)	29
Figure 8 Strategies to Manage Information Flows (Shaw, 2013).....	31
Figure 9 ITIL Relationship management contribution to the ITIL service value chain (AXELOS 2019)	35
Figure 10 The Conceptual Framework of the study.....	38
Figure 11 Interfaces of the Process Input Phase.....	45
Figure 12 Interfaces of the Process Initiation Phase	48
Figure 13 Interfaces of the Process Editing Phase.....	50
Figure 14 Interfaces of the Process Review and Approval Phase.....	52
Figure 15 Interfaces of the Process Storing Phase	54
Figure 16 Interfaces of the Process Usage Phase	55
Figure 17 Interfaces of the Process Revising Phase	57
Figure 18 Interfaces of the Process Archiving and Destroying Phases	59
Figure 19 Interfaces of Document Management System	60
Figure 20 Summary of Document Management Interfaces.....	62
Figure 21 Overview to Improve Document Management Process as a Service.....	62
Figure 22 The Final Guidelines with Prioritized Ideas and Proposals	66
Figure 23 Roadmap to Improve Document Management as a Service	71

List of Tables

Table 1. Data 1 Collection to the Current State Analysis	7
Table 2. Data 2 Collection to improve the Initial Guidelines	8
Table 3. Data 3 Collection to validate the Initial Guidelines	9
Table 4. Summary of process' strengths.....	16
Table 5. Summary of process' weaknesses.....	17
Table 6 Ideas and Proposals to Improve Document Management as a Service	41
Table 7 Ideas and Proposals to Improve Input Phase	43
Table 8 Ideas and Proposals to Improve Initiation Phase	46
Table 9 Ideas and Proposals to Improve Editing Phase	48
Table 10 Ideas and Proposals to Improve Review and Approval Phase	50
Table 11 Ideas and Proposals to Improve Storing Phase	52
Table 12 Ideas and Proposals to Improve Usage Phase	54
Table 13 Ideas and Proposals to Improve Revising Phase.....	56
Table 14 Ideas and Proposals to Improve Archiving and Destroying Phase	57
Table 15 Ideas and Proposals to Improve Document Management System....	59

List of Abbreviations

R&D	Research and Development
HR	Human Resources
SVP	Senior Vice President
IT	Information Technology
VP	Vice President
SAP	System Analysis Program
CRM	Customer Relationship Management
EU	European Union
GDPR	General Data Protection Regulation
ISO	International Organization for Standardization
ITIL	Information Technology Infrastructure Library
PMBOK	Project Management Body of Knowledge
DevOps	Development and Operations
COBIT	Control Objectives for Information Technologies
DMS	Document Management System

1 Introduction

Digitalization is transforming the entire forest industry. In 2015, the demand for graphic paper decreased for the first time worldwide, and the decline has continued ever since. Digitalization has decreased the need for printing and writing on paper-based products and even the increasing demand for packaging along with carton- and containerboards has not been enough to support paper and forest-product companies in their growth. Due to that, larger companies have started to focus on research and development to find new applications and uses for wood and its components. (McKinsey & Company 2019)

Digitalization and the transformation towards innovation and development generates huge amounts of information. In this dynamic environment, the ability to effectively manage documented information becomes crucial. Standardized and common methodologies of information management are essential to support the business, enable agile transformations, and adapt to the changing demands of the industry. The challenge of managing information efficiently is not just a logistical necessity; it represents a significant opportunity for the industry to harness digitalization for sustainable growth and innovation.

1.1 Business Context of the Case Company

The Case Company operates in the paper and forest industry sector. It develops and produces renewable products in packaging, biomaterials, and wooden construction for various industries worldwide. The company's history can be traced back to the 1300s, although it was officially founded in 1998. There are approximately 21,000 employees within the company.

This study focuses on a new Unit in one of the company's business divisions that is committed to fulfilling the increasing demand for bio-based alternatives that replace material sources from fossil fuels and hazardous elements. The company uses all parts of biomass, such as lignin, to develop innovative solutions. One of the focus areas for strategic growth is to focus on innovations.

1.2 Business Challenge, Objective, and Outcome

To respond to the transformation in the industry, the Case Company established a new Unit in August 2023, comprising professionals from diverse backgrounds. The new Unit aims to streamline process management, enhance collaboration, and effectively utilize innovative developments.

However, despite ongoing work with new products within the division, the absence of standardized processes for document management has created challenges. This has resulted in information silos, time-consuming searches, duplicated efforts, inconsistent document handling, and difficulty in determining the latest document versions and recording procedures.

Therefore, the objective of this study is to develop guidelines for improving the document management process in the new Unit, and the outcome of the study is the guidelines for improving the document management process. The outcome enables the Case Company to plan and implement the improvements to the process.

1.3 Scope and Outline of Thesis Report

The study consists of seven sections. Section 1 is an introduction to the study. The introduction is followed by Section 2, which describes the project plan, selected research approach, and data collection. Section 3 includes the Current State Analysis of the current document management process and summarizes the findings from the analysis. Section 4 is for the Literature Research and the Conceptual Framework of the study. Section 5 presents the Initial Guidelines to improve the process. Guidelines are validated in Section 6 based on the feedback from the workshops with selected stakeholders. Section 7 is for conclusions including the proposals for the next steps and self-evaluation of the study.

This study does not include the implementation or further development of the document management process. The scope is limited to analyzing the current state and improving document management guidelines of the Case Company.

The next section describes the project plan including details of the selected research approach and data collection.

2 Project Plan

This section describes the project plan of this study. It describes the selected research approach and design, followed by the data collection.

2.1 Research Approach

The selection of a proper research approach is essential to identify and resolve problems. It is a critical factor to ensure that research findings are correct, reliable, and valid to guarantee that measurements are trustworthy and meaningful.

In general, there are three common research approaches. These are qualitative research, quantitative research, and research with multiple approaches. Qualitative research is aimed at exploring and understanding a phenomenon by gathering information, such as opinions, experiences, and behaviors. The less is known about a phenomenon, the more it is typical to use qualitative research (Kananen 2013).

In turn, quantitative research is aimed at collecting and analyzing numerical data to identify models or theories' significance. Quantitative research focuses on measuring and quantifying specific variables, using statistical tools to make general conclusions that can be applied to a larger group (Kananen 2013).

Research with multiple approaches combines both, qualitative and quantitative research methods by data collection and analysis methods in one research study. In many cases, research approaches are blended as behind the quantitative research there is always also qualitative research. This is because, it is possible to include calculations and numerical data on qualitative written material or

convert it into quantitative (Kananen, 2013). Research with multiple approaches is divided into case research, design research, and action research approaches.

Applied action research aims to change the practice of how things are done. This requires a deep understanding of how things are connected and how changes will influence a phenomenon (cause-effect relationship) (Kananen 2013).

The scope of the study involves developing recommendations to improve the current document management practices and understanding of the current weaknesses' root causes. Based on these aspects, it was decided to use an applied action research approach and utilize the main qualitative research methods for data collection, such as interviews, and workshops.

2.2 Research Design

The business challenge outlined in Section 1 is tackled through a four-stage process to achieve the desired outcome. The Research Design utilized in this study is presented in Figure 1.

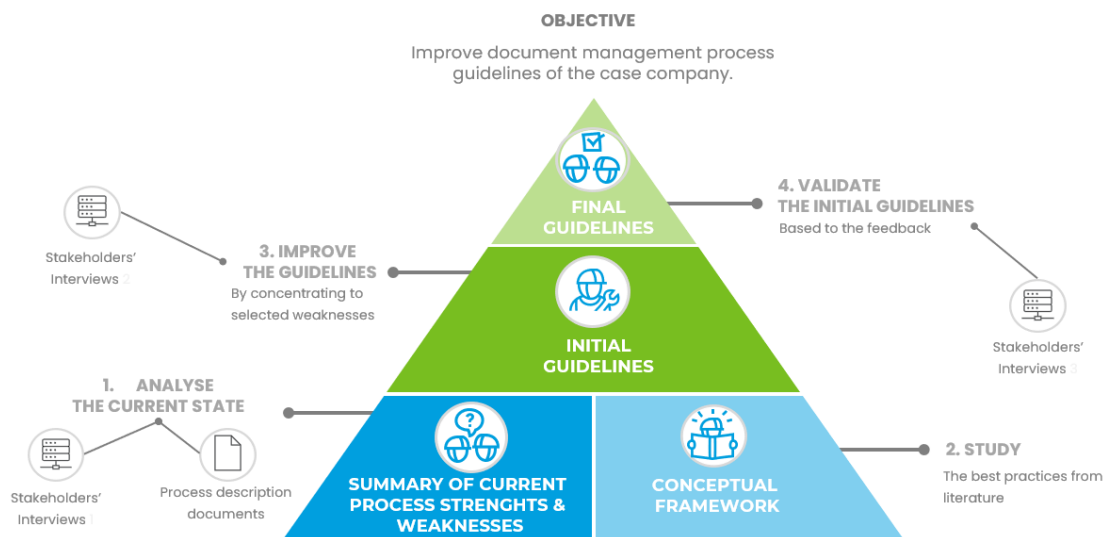


Figure 1. Research Design of the Study

Figure 1 shows that the research design process starts by analysing the current state of the existing document management process in the Case Company. It is essential to have a complete understanding of the current situation before solving

any challenge. The Current State Analysis includes the description and process flow chart of the actual process and summaries of the main process strengths and weaknesses.

The data is collected through interviews with various stakeholders and from existing internal documents relating to document management practices understanding the issue from divergent functions and perspectives. Individual interviews are conducted with selected key stakeholders as a part of the study. The questions of the interview are partly predefined to facilitate a structured and comprehensive discussion of the relevant topics.

Following the completion of the Current State Analysis, the strengths and weaknesses of the existing process are summarized. From the identified weaknesses, the root causes are selected for further improvement.

Second phase of the research design process is the Literature Research. This phase aims to study best practices from the literature to improve the selected critical weakness that were identified in the previous research design process phase by analysing the current state. The outcome of this state is the Conceptual Framework.

The third phase of the research design process is to improve the Initial Guidelines. The summary of the current process strengths and weaknesses and the Conceptual Framework form the base improving the document management guidelines. Data is collected from different stakeholders to develop the Initial Guidelines. The outcome of this phase is the Initial Guidelines for document management process improvement.

Fourth and the final phase of the research design process is to validate the Initial Guidelines based on the feedback from the stakeholders. The outcome of this phase is the Final Guidelines to reach the main objective of this study to improve the document management guidelines of the Case Company.

2.3 Data Collection Plan

This study contains data from various sources such as internal documents and structured interviews and workshops. Figure 2 below provides an overview of all the methods used for collecting data in this study.




		CONTENT	SOURCE	INFORMANT	TIMING & RECORDING	OUTCOME
DATA 1 ANALYSE THE CURRENT STATE		Current document management process: <ul style="list-style-type: none"> Description Strengths and Weaknesses 	Stakeholders' Interviews Process description documents	<ul style="list-style-type: none"> Function process owners Unit members 	<ul style="list-style-type: none"> 12/23 – 01/24 Meeting memorandums 	SUMMARY OF CURRENT PROCESS STRENGTHS & WEAKNESSES <ul style="list-style-type: none"> in document management
DATA 2 IMPROVE THE GUIDELINES		<ul style="list-style-type: none"> Improving selected weaknesses (root causes) 	Stakeholders' Interviews	<ul style="list-style-type: none"> Function process owners Document Management Unit members 	<ul style="list-style-type: none"> 02 – 03/24 Meeting memorandums 	INITIAL GUIDELINES <ul style="list-style-type: none"> for improved document management process
DATA 3 VALIDATE THE INITIAL GUIDELINES		<ul style="list-style-type: none"> Implement improvement ideas to the initial guidelines 	Stakeholders' Interviews	<ul style="list-style-type: none"> Function process owners Document Management Unit members 	<ul style="list-style-type: none"> 04/24 Meeting memorandum 	FINAL GUIDELINES <ul style="list-style-type: none"> to improve document management process

Figure 2. The Data Collection Plan of the Study

According to Figure 2, the first round of data collection is performed through internal documents and structured interviews to identify the existing process strengths and weaknesses. Data 1 collection for the Current State Analysis is presented in more detail in Table 1.

Table 1. Data 1 Collection to the Current State Analysis

No.	Informant/ Source	Approach	Time	Documented
1	R&D R&D Unit members (6)	Workshop	12.10.2023	Internal memorandum
2	HR HR Director	Interview, Video call	4.12.2023	Internal memorandum
3	Process Concept Process Lead Designer	Interview, Video call	12.12.2023	Internal memorandum
4	Sales Business Development Manager	Interview, Video call	13.12.2023	Internal memorandum
5	Finance Controller, Administration and Finance	Interview, Video call	19.12.2023	Internal memorandum
6	Strategy, SVP, Head of Strategy, Finance, IT	Interview, Video call	20.12.2023	Internal memorandum
7	Production VP, Head of Product	Interview, Video call	4.1.2024	Internal memorandum
8	Technology VP, Head of Technology	Interview, Video call	4.1.2024	Internal memorandum
9	Marketing Head of Marketing and Communication	Interview, Video call	9.1.2024	Internal memorandum
10	Product Development, Product Development Director, Material Analysis Manager	Interview, Video call	10.1.2024	Internal memorandum

The second round of data collection was performed after the Literature Research and the Conceptual Framework creation to improve the Initial Guidelines. Data 2 collection was collected through key stakeholder interviews to collect needs and requirements, development ideas, and proposals to develop the Initial Guidelines to improve the document management process. Data 2 collection to improve the current process is presented in more detail in Table 2.

Table 2. Data 2 Collection to improve the Initial Guidelines

No.	Informant/ Source	Approach	Time	Documented
1	Sales Business Development Manager	Workshop discussion	14.2.2024	Internal memorandum
2	Strategy, SVP, Head of Strategy, Finance, IT	Workshop discussion	15.2.2024	Internal memorandum
3	Business Digitalisation, Document Management Professional	Workshop discussion	5.2.2024	Internal memorandum
4	Business Digitalisation, Document Management Professional	Workshop discussion	13.3.2024	Internal memorandum
5	Projects Management Document Management Professional	Workshop discussion	14.3.2024	Internal memorandum
6	Information Technology Vice President, Head of IT & Digitalisation	Workshop discussion	5.3.2024	Internal memorandum

The third round of data collection was to collect the feedback from the key stakeholders for validating the Initial Guidelines to improve the document management process. Data 3 collection to validate the Initial Guidelines is presented in more detail in Table 3.

Table 3. Data 3 Collection to validate the Initial Guidelines

No.	Informant/ Source	Approach	Time	Documented
1	Project Director, Project Managers (4), Technical Coordinator Process Lead Designer, Category Manager, Maintenance Manager, Senior Process Engineer, Manager, Process Development	Workshop	10.4.2024	Internal memorandum
2	Information Technology Vice President, Head of IT & Digitalisation	Video call	10.4.2014	Internal memorandum

The next section gathers the findings from the Current State Analysis of the existing document management process.

3 Current State Analysis of the Document Management Process

Section 3 describes the current state of the existing document management process and presents the identified strengths and weaknesses.

3.1 Overview

The Current State Analysis includes a description of the actual process and a summary of the main process strengths and weaknesses.

Data on the current document management process was collected through ten interviews with various stakeholders and from existing internal documents. To ensure a comprehensive understanding of the issue, the stakeholders for the interviews were chosen from various functions, positions, and lengths of employment within the company.

The first interview was conducted as a group discussion. However, to prevent any individual from dominating the conversation, it was decided to conduct all following interviews as one-to-one meetings. To facilitate a structured and comprehensive discussion of the relevant topics, these were conducted as semi-structured interviews with some predefined questions to be discussed. The interview format was conversational, allowing the interviewee to focus on the topics of their interest. Field notes were compiled for all the interviews.

Following the completion of the Current State Analysis, the strengths and weaknesses of the current process were summarized.

3.2 Description and Analysis of the Current Process

The current document management process was drawn into a flow chart to visually illustrate the key elements and phases of the process. The current document management process is presented in Figure 3. The document handling practices vary significantly depending on the document type, team, and individuals. Therefore, the flow chart presents only the high-level common phases of the process.

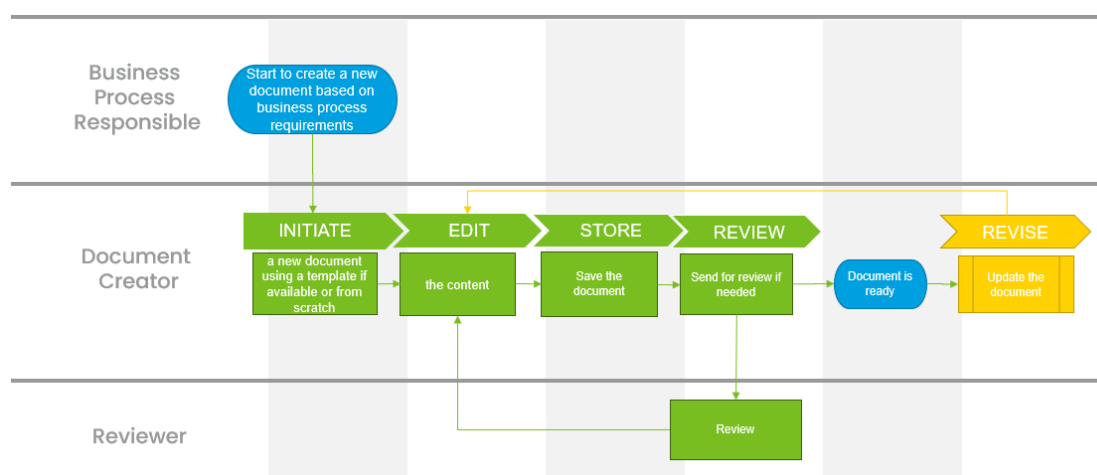


Figure 3. Current document management process

As seen in Figure 3, the current document management process starts by initiating the creation of a new document based on business process

requirements. The current process contains document initiation, editing, storage, and review phases before the document reaches its final state. Furthermore, document handling may involve revisions when it returns to the editing phase.

3.2.1 Process Input

Documentation is generated as a part of the company's business processes, serving as input for the document management process. However, it is sometimes unclear when the document is required, what the minimum requirements are for information content, and who is responsible for it. Therefore, documents may be created randomly according to individuals' discretion and habits or may not be created at all. This might be because business processes are currently inadequately described and instructed, or they may not be described at all.

Business processes with descriptions contributed to a better understanding of document ownership and content requirements. These processes were primarily linked to HR and marketing.

3.2.2 Initiate

After a decision to initiate a new document, the current process begins with document content creation. Documents are currently created from various systems and locations, leading to a lack of identification and uncollected or unutilized metadata. There was only one document type for which the identification number was generated manually. The lack of document identification methods prevents referring to other document sources.

The utilization of templates varies significantly. Some general templates are accessible on the company's intranet to facilitate document creation. Additionally, some teams have their templates stored in their Teams channels, while others are using old documents as templates by copying and pasting them for reuse. The usage of templates and their locations are unclear. Failure to utilize templates leads to unnecessary work and inconsistent document quality.

3.2.3 Edit

While editing the document content, it remains unclear who has worked on the content and what changes have been made since the last save of the document. It is unclear how to limit access to editing a document to only one at a time. As a default, PowerPoint, Excel, and Word-format documents are edited simultaneously by different users in the company's SharePoint, leading to situations where unauthorized users may edit documents that are not intended to be edited.

Interviewees indicated that there is no time to create well-structured and comprehensive documents if any are created at all. This has led to situations where some actions are performed twice due to missing or inadequate documentation. The benefit of document management on the company's business processes is not always acknowledged. Documentation is often seen as a laborious and unnecessary phase of work.

3.2.4 Store

After creating the document, it is stored. There are currently multiple locations, including various folders in different Microsoft Teams channels, desktops, emails, the company's SAP, CRM, HR system, and contract management system. Clear guidelines on document storage locations are lacking, making it necessary to know the specific location of a document to find it. The positive aspect is that there is currently a limited number of documents which is why documents can still be found to some extent. Different teams and individuals have established their own rules for storing documents, creating a situation where their documents are easily found, while others face challenges in locating them.

Due to the folder-based systems, documents may be duplicated and stored in multiple locations through copy-pasting. Consequently, this results in numerous versions of the document, making it unclear which one is the most recent. Missing document version control practices prevent transparency, facilitated collaboration among multiple users, ability to identify and resolve errors or conflicts that may

arise from simultaneous editing, and comprehensive audit trail for the document's creation process.

Due to multiple document locations, the method of restriction varies, leading to a situation where the users can view a document in one folder or system but not in another. Document creators are unsure about who should have access to the information and how it should be categorised. The rules governing document access and restriction policies are unclear, potentially resulting in unauthorized individuals gaining access to confidential information. Managing events such as disasters, data breaches, and system failures becomes also challenging, as each of these issues needs to be addressed separately in each system. This complexity might arise because all these systems operate and are structured differently.

3.2.5 Review and Approve

Documents are usually not officially reviewed. During a review, feedback is typically collected through emails or Microsoft Teams. Review, approval, completion, or proper storage of documents in the right location is not tracked or guided. It is not possible to track who reviewed the document, what feedback was provided, and when these actions occurred. The history of the document review and approval process cannot be followed and tracked. The documents' qualification through a formal review and approval process by relevant colleagues, as well as the publishing of the document for further information utilization, is unclear.

As an exception, contracts with external parties are approved using an electronic signing tool. This has saved time, reduced costs, is environmentally sustainable, legally valid, and provides an audit trail to record when and by whom a document was approved with signing.

3.2.6 Use

The readiness and publishing of a document for information further utilization are unclear. Furthermore, it is not identified which business process or processes utilize the document as an input for their specific purposes. The lack of business process descriptions complicates the identification of where the information originates as an output and is required as an input. This challenge complicates the smooth flow of information within the organization.

There are several good methods to manage documents, but these methods vary significantly across teams. As a result, teams are confident of the effectiveness of their methods but face challenges when trying to find documents managed by others. This inconsistency in document management increases frustration and time-consuming document searching.

Documents are primarily shared with external parties via emails, resulting in a lack of clarity and traceability about which document and version has been delivered. This could result in a negative perception of the company's information management practices from the external parties' perspective.

Missing document metadata complicates reporting, making it challenging to analyze document-related data and present findings. This, for example, might complicate decision-making and performance monitoring in the company.

3.2.7 Revise

The documents are updated either by modifying the original document directly or by duplicating the old revision into a new file. The file is then renamed to signify a new revision, or a new folder is created for storing the old revision. This leads to duplicated versions complicating the tracking of document changes. The document loses its reliability as it becomes challenging to trace and manage the modifications.

The documents do not contain revision tables that display the changes and associated information from previous revisions. This complicates tracking changes in the document when it is printed or shared with a third party, especially without the availability of system-collected data.

3.2.8 Archive and Destroy

In the company, saving and archiving are currently considered synonymous processes. There is currently no differentiation between standard storage and long-term storage, or between actively used and not actively used documents. Retention times are missing, and documents are destroyed based on the users' judgment.

For instance, certain regulations, such as the EU directive for GDPR, set requirements for both managing data and ensuring its proper destroying after specific conditions are met. Currently, there is specific training available to manage GDPR data by EU directives within the organization. However, information about documents containing this data is not systematically collected across all types of documents. As a result, identifying these documents for proper management and destroying them when no longer needed becomes a time-consuming and challenging task.

Archiving and destroying processes for several types of documents are not clearly defined. This might lead to a risk of losing some critical information or non-compliance with legal and regulatory requirements, especially when there is a mandate to destroy specific information after a certain period.

3.2.9 Document Management System

The company has developed an in-house document management system on SharePoint, but it has only been utilized for some specific documents by certain employees. Some of the interviewees were not aware of the system and some used it only for some documents' management.

The interviewees indicated a lack of awareness regarding common document management rules and practices. The functionalities of the current system are not well-known, and there is a lack of support available. Furthermore, feedback is not systematically collected from the users, and the system or practices are not developed based on that feedback.

Document management rules and practices are missing as well as proper training, hindering the proper utilization of the systems. Additionally, there is a lack of training, support, maintenance, and development of document management system. A team to oversee document management activities is missing.

3.3 Summary of Findings

The Current State Analysis was conducted to identify the strengths and weaknesses of the existing document management process in the company. The results of strengths are illustrated in Table 4 and the results of weaknesses are illustrated in Table 5.

Table 4. Summary of process' strengths

Good common:	No.	Findings
Principles & methods	1	to manage HR and Marketing related documents
Tools & Systems	2	to sign documents electronically
Team	3	to create group-level guides and templates

Table 5. Summary of process' weaknesses

Lacking common:	No.	Findings
Principles & methods	1	to create documents
	2	to identify and categorize documents
	3	to review and approve documents
	4	to store in proper locations documents
	5	to revise and manage changes in documents
	6	to archive and destroy documents
	7	to control document permissions
	8	to manage roles and responsibilities
Tools & Systems	9	to manage documents
	10	to manage templates
	11	to manage documents' metadata
	12	to audit trail
Team	13	to arrange training programs for document management
	14	to create instructions for document management
	15	to oversee and manage activities of document management
	16	to support, maintain, and develop document management system and practices
Culture	17	to utilize efficiently available information
	18	to understand the benefits of document management
	19	to understand the relationship between business processes and document management

As presented in Tables 4 and 5, the total number of identified findings was twenty-two, consisting of three strengths and nineteen weaknesses. The findings are categorized under four different themes: principles & methods, tools & systems, team, and culture depending on the themes to which they best relate.

While addressing the weaknesses is crucial for process improvement, it is equally essential to emphasize the importance of maintaining existing strengths to enhance the overall performance of the process.

3.4 Key Findings to Study Further

While analyzing the findings presented in Tables 4 and 5, it was seen that the weaknesses are interconnected and mutually reinforce one another. For instance, a versatile document management system loses its effectiveness without well-defined document management workflows. These workflows, in turn, become ineffective without clearly defined roles. Roles, however, are useless without individuals who use the system appropriately, emphasizing the need for a systematic training program and daily support.

Furthermore, effective information retrieval is connected to several factors. Metadata plays a crucial role in identifying information content, an electronic document management system facilitates faster information searching and templates organize relevant information in specific parts of a document, making it easier to retrieve similar content from comparable documents.

3.4.1 Root causes

During the analysis of the root causes for the findings presented in Table 5, it became apparent that the weaknesses are caused by several factors. These included a lack of integration between document management and the business processes, unclear scope of which documents need to be managed, and unclear responsibilities. These issues directly or indirectly contribute to all identified

weaknesses within the existing process. The summary of these root causes is presented in Figure 4.

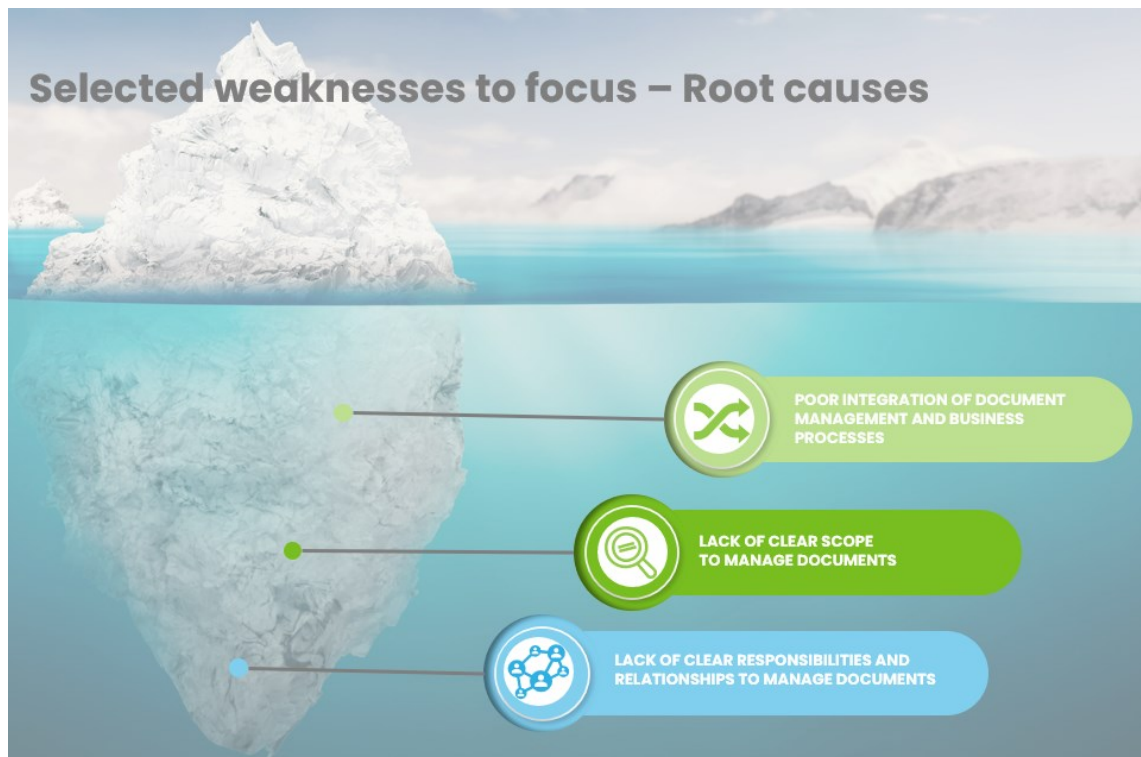


Figure 4 Selected weaknesses to focus for further study

For instance, the lack of designated review and approval roles for documents arises due to undefined or ambiguous responsibilities within the business process. It becomes nonsensical to review and approve documents when it is unclear what content requires review and what purpose the approval serves.

Another example is simply establishing instructions for storing documents in designated locations does not guarantee their correct placement, as employees may not read or follow these instructions for several reasons. The only reliable method to ensure proper document storage is through proactive supervision by the business process owner. The process owner needs to monitor the progress of the business process, including the documents that the process is generating. This highlights the importance of the business process owner being motivated to ensure documents are stored in the correct location and to track that this is consistently maintained.

Also, managing documents becomes challenging without a clear understanding of their contextual need and purpose, as well as their future utilization and intended audience. To cover these needs and purposes effectively, it is essential to closely cooperate with the process owner, whose responsibility includes defining these critical aspects. Therefore, the document management function should prioritize close cooperation with business process owners, who needs to produce and manage the documents. Subsequently, document management can establish suitable frameworks based on best practices to address these needs.

As seen in examples, even when document management principles, methods, tools, and systems are well-defined, their effectiveness may be compromised without clear ownership of the documented information. The ownership of documented information lies with those who need and require the information to be produced and documented, primarily the business process owner who manages the entire business process. These needs and requirements should drive the interest and motivation to manage the documented information related to that process.

Unlike other teams, such as document management, the business process owner is familiar with the context and requirements surrounding the information. Business process owners have the visibility and understanding of why and where the information will be needed. If the business process owner does not have the interest and motivation to manage the documents required by its process, it may indicate that the information is not needed and should not be managed.

Moreover, the commitment from the company and its business processes to manage their documents is essential, as it contributes to the overall effectiveness of the document management process. Therefore, guidelines to manage and track the fulfilment of business process-related requirements to document information should be integrated into the business process itself.

Due to the significant impact of the current document management process not being integrated with business processes and unclear scope and responsibilities, it was considered necessary to elaborate further on these identified root causes

presented also in Figure 4 Selected weaknesses to focus for further study Figure 4 and its implications for other weaknesses. This is essential as all the weaknesses identified in Table 5 play a crucial role in improving the overall efficiency of the document management process and are impacted by the absence of integration with business processes.

This section of the study focused on presenting an analysis of the current document management process in the Case Company. The analysis brought to light various weaknesses in the process that require attention and improvement to increase the overall performance of the company. To enhance the document management process comprehensively, the decision was made to address the presented root causes, aiming to improve all the identified weaknesses outlined in Table 5.

The next section 4 describes best practices and ideas from the literature to address the root causes identified in the current document management process.

4 Improvement Ideas from Relevant Literature

In the previous section, the Current State Analysis enabled identifying the weaknesses to be addressed to improve the existing document management process of the Case Company. In this section, the Literature Research is performed to explore potential best practices and ideas to mitigate the identified weaknesses. This section presents potential ideas from different literature sources to improve the current document management process.

4.1 Improve Process Integration

This chapter aims to study potential best practices and ideas from the Literature Research to improve the integration of document management processes with business processes.

To gain better understanding of the relationship between documented information and operational processes, both Wiggins (2012) and Shaw (2013) explains that information could be seen as the lifeblood of business, flowing through the organisational elements of structures, processes, people, and tools. In this context Shaw (2013) further clarifies that operational processes can function as the muscles of the organisation, enabling it to perform the actual work.

Therefore, just like blood and muscles, information and operational processes are essential components that must be managed together.

4.1.1 Context of Document Management Process

A document is *“information and the medium on which it is contained,”* and documented information *“is the information required to be controlled and maintained by an organization and the medium on which it is contained”* (ISO 9000, 2015). (“ISO 9001:2015 Clause 7.5 Documented Information”) ISO 9001 (2015) utilizes the term “documented information”, with the flexibility to use alternative terms such as “documents,” “records,” “documentation,” or “protocols” depending on the organisation’s preferences and needs.

According to ISO standards, documents are information. To emphasize the importance of document management, it is crucial to understand the document and information management context and value for the company.

Both Wiggins (2012) and Rhem (2022) emphasize the importance of the relationship between data, information, and knowledge within the framework of knowledge management. Rhem further elaborates on this concept by introducing the knowledge management pyramid in Figure 4Figure 5, which explains the terminologies for data, information and knowledge and their relationships.

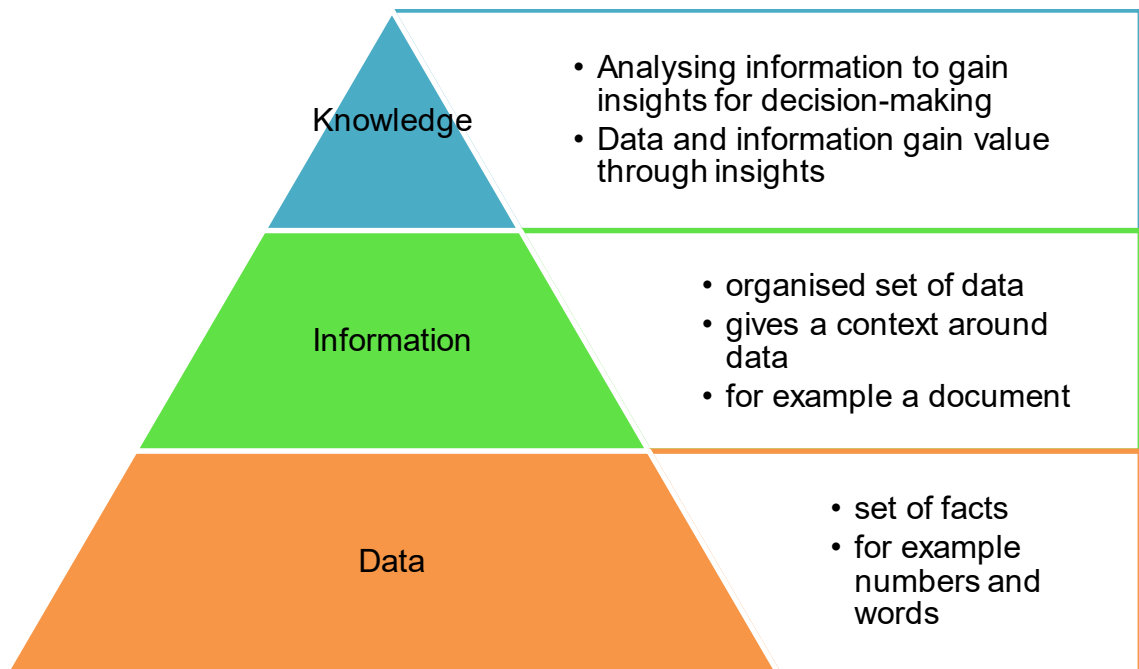


Figure 5 Knowledge management pyramid (Rhem, 2022)

As seen in Figure 5, the lowest level of the knowledge management pyramid is for data, which means a set of facts for example numbers and words. In the middle of the pyramid is information, which means an organized set of data that gives a context around the data, for example, a document. Analysing information to gain insights for decision-making forms the top of the pyramid, which is called knowledge. Data and information gain value through insights.

The relationship between documented information and knowledge management is important as it is a key resource in business. Knowledge is gained through experience, experience through activity, and activity (doing things) is what operations management is about. Therefore, it can be stated that documents gain value through insights (Rhem, 2022).

Wiggins (2012) states that information is essential for the success of businesses and individuals, providing up-to-date and reliable insights into the current situation and enabling accurate forecasting for the future. Moreover, he concludes that effective and streamlined management and utilization of

information can significantly improve the business performance of an organisation.

4.1.2 Context of operational process

Establishing the context of the operational process is crucial as it forms a fundamental aspect of this study.

Slack, Champers and Johnston (2007) define operations as the essential activities within an organization required to meet customer demands. These activities involve transforming inputs into outputs, with inputs typically consisting of materials, information, and customers. Operations are collections of processes interconnecting with each other.

Both Wiggins (2012) and Shaw (2013) assert that outputs are conducted through a business process, which consists of needed actions to achieve specific outcomes. These outputs can be, for example, documents such as marketing plans or demand forecasts from the process that belongs to the marketing function.

Moreover, Slack, Champers, and Johnston (2007) argue that each process is simultaneously an internal supplier and an internal customer for other processes within an organisation. When internal customers get the same care as external customers, the whole operation becomes more effective.

Functions, as described by Slack, Champers, and Johnston (2007), are organizational components responsible for managing activities. Functions manage processes. Wiggins (2012) states that it is crucial to note that functions are separated from organizational structures like the “legal department” or “sales department”. While functions typically remain consistent, managerial structures can change such as centralization, decentralization, devolution, or restructuring over time. Functions are categorized into two types: operational and support functions.

Operational functions represent an organization's core activities, defining its purpose and identity. According to Slack, Champers, and Johnston (2007), operations are the core of the company as those are producing the products and services that are the objective of the company.

On the other hand, support functions are essential for the survival of an enterprise. For example, in addition to operational functions, organizations must also navigate a range of legal, and social environments, necessitating a range of support functions to facilitate daily operations and the long-term goals of the organization.

4.1.3 Developing Service Management

According to Halper et al. (2009), in an increasingly interconnected business world, everything is transitioning into a service. Consequently, document management can be also viewed through the context of a service-oriented approach.

To improve process integration ITIL service management framework can facilitate the integration of information and technology with other organizational functions. The ITIL Service Value System framework ensures the integration, offering a clear path towards creating value and keeping the organization focused on its objectives. (AXELOS, 2019)

Gallacher and Morris, (2012) argue that initially, ITIL was a well-kept secret within the IT sector after its emergence in the 1980s. However, over time, it has evolved into the recognized standard for achieving service management excellence. Its popular adoption can be attributed to its practical approach, rooted in real-world organizational practices. The framework's main appeal lies in its emphasis on delivering value to the organization by aligning IT services with business requirements. This guiding principle ensures that all efforts within ITIL are geared towards a common goal: delivering services that effectively support the needs of the business.

AXELOS (2019) states that ITIL service management encompasses a diverse set of goals, from boosting customer satisfaction and streamlining operations to maintaining service quality, mitigating risks, fostering flexibility, enabling informed decision-making, and ensuring oversight and control over service provision. Through the alignment of services with business objectives and adherence to industry best practices, service management empowers organizations to deliver value to customers, maximize resource utilization, and successfully realize strategic goals.

Halper et al. (2009) along with AXELOS (2019) defines that service management is a collection of various organizational capabilities that must consistently collaborate to deliver value to customers through services. Within this context, the term "organization" could also mean service providers such as the document management function, while "value" represents the inherent worth, significance, and importance of the service provided.

Figure 6 illustrates the ITIL framework's Service Value System. This system consists of the system inputs such as opportunities and demands, system core components like ITIL service value chain, ITIL practices, ITIL guiding principles, governance and continual improvement and system outputs creating value for the organization, its customers, and other stakeholders.

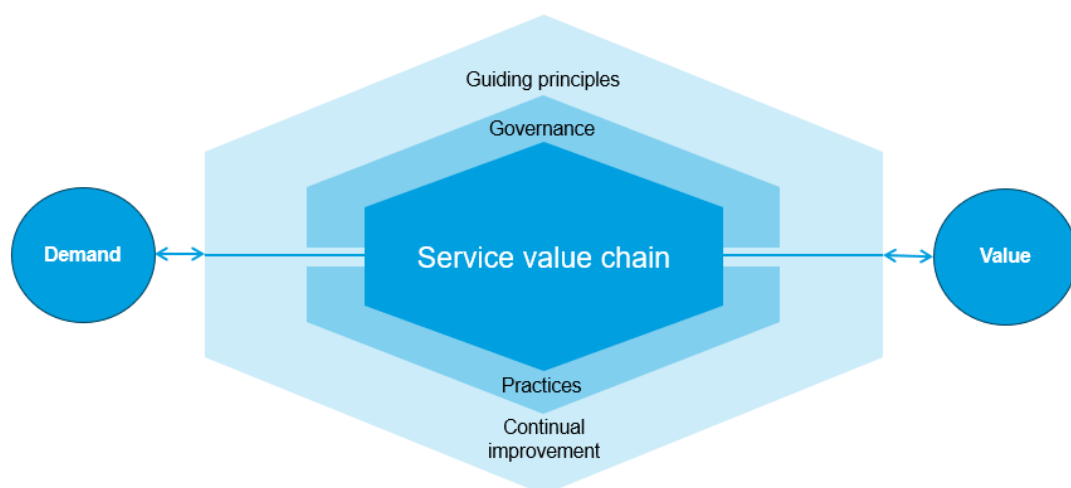


Figure 6 The ITIL Service Value System (AXELOS, 2019)

Within the ITIL Service Value System, inputs like opportunities and demand serve as the fuel that drives the engine of service management. Opportunities represent chances for growth or improvement, while demands signify the needs and expectations of customers or stakeholders. The system core components function as the machinery that processes and harnesses these inputs. (AXELOS, 2019)

Cartlidge (2022) and AXELOS (2019) state that ITIL guiding principles are recommendations offering direction to the organization regardless of changes in their objectives, strategies, work types, or management setups. The guiding principles help organizations to act and decide well as they use a service management approach and adjust ITIL guidance to their own situations and requirements. The guiding principles facilitate continual improvement across all organizational levels.

Gallacher and Morris, (2012) and AXELOS (2019) state that the ITIL framework resonates with various other frameworks, methodologies, standards, philosophies, and bodies of knowledge, including Lean, Six Sigma, ISO 9000, PMBOK, Agile, DevOps, and COBIT. This enables organizations to seamlessly integrate multiple methods into a comprehensive approach to service management.

These principles are versatile and can be applied to any initiative and relationship with stakeholder groups. For instance, the principle of focusing on value is relevant not only to service consumers but also to all stakeholders and their definitions of value (AXELOS, 2019).

Cartlidge (2022) argues that the ITIL service value chain serves as a dynamic model for creating, delivering, and continuously improving services. It consists of six key activities that can be combined in several ways to create multiple value streams. This flexibility allows organizations to adapt the value chain to different approaches such as DevOps or centralized IT, catering to the requirements of multimodal service management. The adaptability of the service value chain enables organizations to respond effectively and efficiently to changing demands

from stakeholders. Moreover, the ITIL practices further enhance this flexibility by supporting multiple activities within the service value chain.

ITIL Practices represent sets of organizational tools designed for executing tasks or achieving specific goals, while ITIL Continual improvement is an ongoing organizational effort at all levels to ensure that performance consistently meets stakeholders' expectations. Service management's continual improvement involves the ongoing process of refining and enhancing service delivery practices, driven by feedback, analysis, and adaptation. (AXELOS, 2019)

Finally, the organization's capabilities and resources encompass its people, processes, technologies, and assets, which are deployed and optimized to fulfill service demands and capitalize on opportunities. These elements collectively enable the organization to effectively respond to and capitalize on the inputs received.

Figure 7 presents the main building blocks to implement service management based on the ITIL framework.

Assessment:	Evaluate the current state of service management practices within the organization to identify strengths, weaknesses, and areas for improvement.
Alignment:	Align ITIL practices with organizational objectives, business goals, and industry standards to ensure that service management efforts support the broader strategic vision.
Planning:	Develop a comprehensive implementation plan that outlines specific objectives, timelines, resource requirements, and success criteria for each ITIL practice being adopted.
Training:	Provide training and education to employees at all levels to ensure that they understand ITIL concepts, principles, and best practices relevant to their roles and responsibilities.
Process Design:	Design and customize ITIL processes and procedures to fit the unique needs and requirements of the organization while adhering to ITIL guidelines and standards.
Implementation:	Roll out ITIL practices incrementally, starting with pilot projects or small-scale initiatives before scaling up to broader implementation across the organization.
Monitoring and Measurement:	Establish metrics, KPIs, and performance indicators to monitor the effectiveness of ITIL practices and track progress towards achieving defined goals and objectives.

Figure 7 ITIL Service Management building blocks (AXELOS, 2019)

In summary, improving the integration of document management processes with business operations can be achieved by establishing a dedicated document management service focused on delivering value to its stakeholders as internal customers.

4.2 Clarify the Scope

This chapter aims to study potential best practices and ideas from the Literature Research to clarify the scope of the document management process. Improvement ideas have been made with a particular focus on integrating document management with operational processes. Improving document and information management requires an understanding of the scope of documents

to be managed, decision-makers in the management hierarchy, and who are the key stakeholders be involved (Wiggins, 2012).

Shaw (2013) highlights the importance of understanding the information needs of the business to prevent unnecessary expenses associated with collecting, storing, and analysing documents that are not required. ISO 15489 (2017) mandates that businesses must evaluate their activities to determine which documents need to be created and captured, as well as establishing suitable retention periods for these documents. This process involves understanding the business needs, legal obligations, and associated risks. Additionally, the ITIL 4 framework, emphasizes that demands signify the needs and expectations of customers or stakeholders as defined also in Chapter 4.1.3.

4.2.1 Developing process flow charts

Members are looking to receive the right information in the right form at the right time. To ensure this, it is essential to understand where to get information and consider potential future use of the information when creating new documents. (Wiggins, 2012)

According to Shaw (2013), organizations often overlook addressing their actual business and the relevant business information managed by their systems. Simply increasing the quantity of information does not substitute for ensuring its quality. Understanding how operational processes are linked with essential information for achieving business success highlights the necessity for adaptations to classic process modelling approaches.

Shaw (2013) suggests that in integrating operational processes with information, the specific form of process model used to define operational processes is less critical than clearly defining what information is required, created, processed, stored, and transferred by each process step.

Shaw (2013) further explains that typically most essential information flows are outlined in the process flow charts because they are essential for completing the

process. However, even the simplest processes reveal a significant volume of information flows. Process owners often fail to illustrate steps for managing these flows or simplify them due to a lack of familiarity with IT systems. To mitigate conflicting viewpoints, Shaw recommends implementing three essential strategies that are presented in Figure 8.

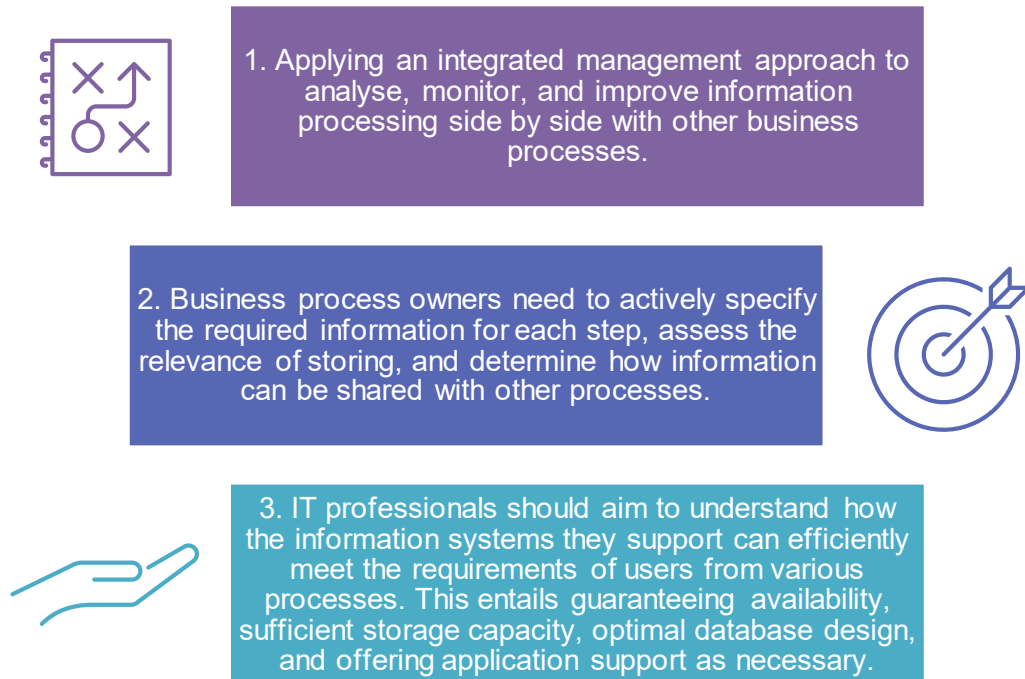


Figure 8 Strategies to Manage Information Flows (Shaw, 2013)

4.2.2 Developing business analysis

To clarify the scope of document management, it is crucial to understand business needs. AXELOS (2019) outlines a business analysis practice from the ITIL framework that involves identifying and analysing these needs, defining their scope, and proposing solutions to meet them.

PMI (2024) states that parties with various backgrounds and industries can utilize business analysis practices to achieve successful outcomes in their respective organizations or initiatives.

Based on AXELOS (2019) business analysis contributes to strategic decision-making, evaluation and improvement, requirement gathering, solution design and

transition, as well as ongoing service delivery. Effective collaboration among different business Units is essential for holistic analysis and comprehensive solution proposals, fostering partnership when compromises are needed. Access to relevant information, including process documentation, stakeholder interviews, and appropriate data analysis technologies, is vital for effective business analysis.

Efficiently and thoroughly completing tasks is the focus of business analysis, avoiding overly deep and time-consuming analysis without acting. Relying solely on one extensively analysed solution may delay implementation or lack practicality. Therefore, processes must address these risks. The results of business analysis not only identify areas for current improvement but also inform future needs. Critical thinking, communication, and data analysis skills are essential for business analysis. (AXELOS, 2019).

AXELOS (2019) further emphasizes that developing business analysis involves evaluating business systems, processes, services, or architectures within the changing internal and external landscape, prioritizing elements within the ITIL Service Value System, identifying areas for improvement and innovation, suggesting actionable steps for improvements, documenting business requirements for supporting services and proposing solutions validated with stakeholders.

Business analysis is interdependent with other ITIL practices such as strategy management, software development, and service design, necessitating relationship management and interaction throughout the service value chain. By ensuring accurate business needs and requirements gathering and analysis, business analysis facilitates the design of high-quality solutions and supports continual improvement efforts throughout the service lifecycle.

4.3 Clarify Responsibilities and Relationships

This chapter aims to study potential best practices and ideas from the Literature Research to clarify process responsibilities and relationships of the document

management process. Improvement ideas have been made with a particular focus on integrating document management with operational processes.

As highlighted in Chapter 4.2, Wiggins (2012) emphasizes that improving document and information management requires identifying the decision-makers within the management hierarchy and identifying key stakeholders to be involved.

Organization structures may vary significantly depending on the company, and these structures tend to change when organizations grow. For example, new organizations typically start with a centralized, informal structure lacking bureaucracy. However, as they grow, they need to implement standardization and official principles. On the other hand, in functionally structured hierarchies, for instance, those typically seen in government organizations, bureaucratic systems are common. The level of authority one manager has over the other changes depending on the culture, goals, and objectives of the organization (Wiggins 2012).

Shaw (2013) states that the information responsible in a business is the one who has the most to lose if the information is incorrect, not available when it is needed, or lost. If the individual lacks the technical skills to execute that responsibility on their own, then this person is expected to work with whatever IT function the business has or other sources, both internal and external, to resolve any problems that occur. The person with the most suitable position to input information bears the responsibility for ensuring its accuracy and validity.

4.3.1 Developing service catalog management

In the ITIL framework, service catalog management means clearly defining and thoroughly documenting services, including their scope, ownership, and responsibilities. The Service Catalogue serves as a structured inventory of all current and approved services provided by a service provider. It helps engage stakeholders and streamline service delivery and can be presented in various formats such as documents, online portals, or specialized tools (AXELOS, 2019).

Service catalog management involves a continuous cycle of tasks: publishing, refining, and updating service descriptions and offerings. Its main goal is to provide a comprehensive view of available services and their terms of use. Designated roles, for example, service owners, oversee and maintain the list of services, ensuring it reflects current offerings and facilitates introducing, modifying, or retiring services. The catalogue encompasses diverse services and attributes; hence it should offer customizable views tailored to different stakeholders' needs without creating complexity. It should support customer engagement, discussions on standard and non-standard services, and automate request and order processes to ensure ongoing adoption and utility (AXELOS, 2019).

Additionally, the service catalog provides detailed information on service scope and offerings, aiding strategy, and investment decisions. It facilitates interactions with customers and users, potentially automating practices for example relationship management and service desk operations. The catalog ensures comprehensive coverage of both the utility and warranty aspects of services, including components for example information security policies, service continuity levels, and agreements. It involves crafting service descriptions, request models, and perspectives for publication to meet stakeholders' diverse needs (AXELOS, 2019).

Service catalog management contributes to the value chain by offering tailored views for the procurement of components and services. In summary, it provides a framework for understanding service delivery and support while communicating expectations regarding agreements and performance standards.

4.3.2 Developing relationship management

The ITIL framework introduces relationship management practices aimed at improving integration and building stronger connections between an organization and its stakeholders. These practices are not limited to general organizational functions; they can also be applied to manage relationships within, for example, document management processes.

AXELOS (2019) defines that the purpose of relationship management is to establish and maintain relationships between the organization and its stakeholders at both strategic and tactical levels. This involves identifying, analyzing, monitoring, and continually improving relationships with and between stakeholders.

Relationship management brings benefits for service management that are presented in Figure 9.



Figure 9 ITIL Relationship management contribution to the ITIL service value chain (AXELOS 2019)

For instance, relationship management facilitates a deep understanding of customer needs, enabling proper prioritization. This leads to increased stakeholder satisfaction and fosters positive relationships between the service provider and its stakeholders. Collecting feedback ensures refinement and minimizes disruptions for customers during transitions. Additionally, it clarifies

customers' preferences for new offerings, ensuring alignment with business objectives. Any stakeholder concerns or escalations are addressed in the relationship management practice through a respectful and formal process. Furthermore, relationship management aids in value creation for both service consumers and the organization by aligning with strategic priorities and resolving conflicting stakeholder requirements (AXELOS, 2019).

Service providers should manage relationships with various stakeholders, internal and external, beyond just service consumers (sponsors, customers, and users). The relationship management practice should apply to all relevant parties.

4.3.3 Develop organisational governance

ITIL organizational governance practice establishes the framework for decision-making and accountability, ensuring that actions align with strategic objectives and comply with regulatory requirements.

AXELOS (2019) states that typically improvements require changes in how people work, behave, and sometimes, their roles. Whether the change involves practices, organizational structures, technology, or the introduction of new services, people are crucial to its success. Organizational change management aims to ensure that everyone affected by the change accepts and supports it. This involves minimizing resistance, addressing adverse impacts, and providing training and awareness for a smooth transition.

Organizational change management contributes to every part of the ITIL Service Value System where cooperation, participation, and enthusiasm of individuals are required. To ensure the success of improvement initiatives, certain elements are crucial in addressing the human aspect:

Clear and relevant objectives: Objectives of the change must be understandable and meaningful to stakeholders within the organizational context. The change should demonstrate real value.

Strong and committed leadership: Active support from sponsors and leaders is essential. Sponsors are managers or business leaders who advocate for and authorize the change. Leaders should visibly support and consistently communicate their commitment.

Willing and prepared participants: Change requires willing participants who understand its importance. Convincing participants of the change's value through training, awareness, and regular communication increases their readiness to embrace it.

Sustained improvement: Many changes fail when people revert to old habits over time. Organizational change management continually reinforces the change's value through communication, addressing impacts, and maintaining support from sponsors and leaders. Using metrics strengthens the communication of value.

By addressing these elements, organizational change management ensures a smoother transition and increases the likelihood of successful improvements (AXELOS, 2019).

4.4 Conceptual Framework

The improvement ideas and best practices reached in from the literature are summarized as a conceptual framework in a visual format, presented in Figure 10.

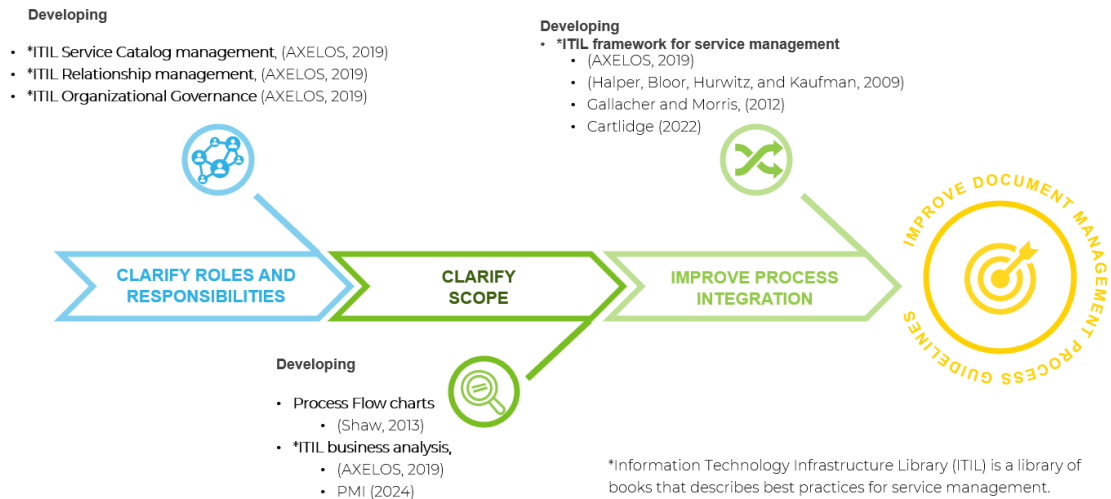


Figure 10 The Conceptual Framework of the study

As shown in Figure 10, the Conceptual Framework containing the ideas is divided into three themes based on the root cause.

Process integration within the ITIL framework involves harmonizing with diverse frameworks, methodologies, standards, philosophies, and bodies of knowledge. It offers a comprehensive solution for fully integrating the document management process with business processes streamlining operations and aligning with overall business objectives.

Scope-related best practices focus on identifying business needs through ITIL business analysis and the development of process flow charts. This helps in understanding which documents need to be managed within the business. By conducting thorough business analysis and creating process flow charts, organizations can effectively determine the scope of document management and ensure that all necessary documents are identified and managed appropriately.

To improve clarity regarding responsibilities and relationships within processes, best practices, and ideas are gathered from ITIL service catalog management and ITIL relationship management practices. These practices help organizations to ensure that responsibilities and relationships are well-defined and understood, promoting effective collaboration, and streamlined operations within the process.

Next, Section 5 presents the Initial Guidelines developed based on best practices and ideas from the Literature Research. The Conceptual Framework findings will be applied to the identified document management process phases to improve the Case Company's document management guidelines.

5 The Initial Guidelines to improve the document management process

Section 4 presented best practices from the literature to mitigate the identified weaknesses of the current document management process in the Case Company. This section provides a summary of the Initial Guidelines formulated based on these best practices.

5.1 Overview

The development of the Initial Guidelines was primarily conducted through collaborative one-to-one discussions, with input from a core group of stakeholders comprised of the Current State Analysis interviewees. Selecting a one-to-one method aimed to prevent individual opinions from being overshadowed in larger group discussions.

The discussions started with presenting findings from the Current State Analysis and ideas to improve weaknesses identified through the Literature Research. The discussions took place in an open-ended format, supplemented with predefined topics to facilitate the discussions and stimulate idea generation.

During the one-on-one meetings, discussions encompassed various process phases, with some topics receiving more attention based on stakeholders' interests. Consequently, not all stakeholders reviewed every phase; rather, priority was given to those deemed most relevant, and key points from these discussions were summarized.

The primary objective of the discussions was to assess whether the guidelines were feasible for practical implementation rather than remaining purely

theoretical. Additionally, the discussions evaluated the capacity of the guidelines to add value to the overall process.

Throughout the discussions, development ideas and proposals were documented and captured as field notes.

5.2 Guidelines to improve document management process as a service

Sections 3 and 4 have detailed various aspects of the company's document management process. The Initial Guidelines are developed to address the root causes identified in the Current State Analysis, focusing on improving process integration, clarifying the scope, and defining responsibilities and relationships across different document management process phases.

During the discussions, it became evident that adopting the ITIL framework for service management could address these issues highlighted in the Current State Analysis. Effective document management can facilitate knowledge sharing and support decision-making within an organization. By implementing document management as a service, an organization can ensure that relevant information is captured, stored, and easily accessible to those who need it. This enhances knowledge sharing among employees, prevents information silos, and fosters a culture of collaboration and innovation.

Moreover, well-managed documentation enables informed decision-making at all levels of the organization. Decision-makers rely on accurate, up-to-date information to assess situations, identify trends, and develop strategies. Effective document management not only improves operational efficiency but also serves as a cornerstone for knowledge management and decision-making processes within an organization, thereby driving overall productivity and success.

To achieve real improvement and integration into processes, document management must be treated as a service. This involves identifying key activities

based on both the Literature Research and organizational needs. In further developing the document management service,

Table 6 was created to list the main activities identified. These activities serve as a foundation for implementing document management as a service and ensuring its alignment with organizational goals and requirements.

Table 6 Ideas and Proposals to Improve Document Management as a Service

No.	Ideas & Proposals	Responsible
1	Define the objectives and scope of the document management service	Document Management Function
2	Identify the business requirements and goals it aims to support	
3	Develop a transition plan for implementing and deploying the document management service.	
4	Define roles and responsibilities for stakeholders involved in the transition.	
5	Establish KPIs and metrics to measure transition success.	
6	Deploy the document management service according to the transition plan.	
7	Provide training and support to users and stakeholders for adoption and usability.	
8	Establish processes for incident management, problem management, and request fulfilment related to document management.	
9	Implement monitoring and reporting mechanisms to track service performance.	
10	Regularly review metrics and KPIs to identify improvement areas	
11	Conduct periodic service reviews with stakeholders to gather feedback and address issues.	
12	Use stakeholder feedback and performance metrics to identify improvement opportunities.	
13	Implement changes through the service improvement plan process.	
14	Continuously update documentation, processes, and procedures to align with ITIL's best practices and organizational objectives.	
15	Integrate the document management service seamlessly with other ITIL processes.	
16	Define interfaces and dependencies to enable effective collaboration and coordination.	

Stakeholders involved in the discussions of the Initial Guidelines were confident that by following this structured approach presented in

Table 6, organizations can build a robust document management service that supports business objectives, enhances operational efficiency, and delivers value to stakeholders.

During the discussions, the need for a Document Management Function was highlighted, emphasizing its role in systematically maintaining, supporting, and developing document management principles, methods, tools, and systems. The Document Management Function should aim to streamline, automate, and standardize the management of documented information within the organization of the Case Company, thereby enhancing efficiency and coherence.

The remaining Initial Guidelines focus on addressing improvement ideas and proposals concerning various phases of the document management process. These guidelines do not exclude document management as a service but can be integrated as part of service delivery. The subsequent subchapters will detail the development of these Initial Guidelines, following a logical structure based on the process phases.

5.2.1 Input phase

The discussions started by reviewing the Current State Analysis of the process input phase. That revealed uncertainties regarding the timing of document and information needs, the minimum information content requirements, and the responsible parties for these aspects.

Discussions focused on the integration of document management process into the business processes, generating development ideas. These ideas and proposals aimed to improve the process input phase and provide clarity on associated responsibilities. These ideas were gathered from the discussions and summarised in Table 7.

Table 7 Ideas and Proposals to Improve Input Phase

No.	Ideas & Proposals	Responsible
1	The processes-related documents should be clearly marked on the standardized business process flow charts.	Business Process Owner
2	Develop a service catalog to communicate the scope of document management for Process Owners.	Document Management Function
3	Support the identification and description of process documents within flow charts.	Document Management Function
4	List the process-related documents that serve as input for initiating the document management process.	Document Management Function
5	Any changes to process-related documents or their management shall be reviewed and updated accordingly	Business Process Owner
6	Document management principles and methods need to be defined and managed	Document Management Function

Discussions with various stakeholders involved analyzing documents identified from the business processes and the reasons why these documents are needed or required. Throughout these discussions, it became evident that input from the Business Process Owners is necessary to establish effective document management practices and systems.

When initiating the development of a new document-type handling process, it is essential to understand the process that generates the document. The Process Owner should define the purpose of the documented information (define the business need) and take responsibility for it. The Document Management Function is tasked with leading the work and ensuring that systems meet business requirements, as recommended in the Literature Research in Chapter 4.2.1.

During discussions, the importance of service catalog management became evident through the Literature Research. This arose due to confusion regarding the scope of document management—some believed it was limited to writing and

content creation, while others thought it focused solely on maintaining document management systems. To clarify this, service catalog management development was suggested. This should help understanding and fulfilling the requirements and expectations of stakeholders regarding document management process.

Based on the discussions, it was widely acknowledged that in many cases, business process charts are either missing or not kept up to date. Additionally, it is current practice to include only key documents in flow charts, as argued also in the Literature Research. To address this, discussions highlighted the importance of involving document management in business process development from the beginning, supporting in the identification and description of documents within flow charts. By identifying and describing these documents within flow charts, an action plan for the Document Management Function could also be formulated, specifying the types of documents that need to be managed.

It was commonly discussed that if the business process undergoes changes, it should be the responsibility of the Business Process Owner to ensure that any changes to process-related documents or their management are reviewed and updated accordingly. The Business Process Owner is responsible for defining the overall requirements for the documents produced during the process.

Figure 11 illustrates the interface between the Business Process Owner and Document Management Function in the document management process input phase.

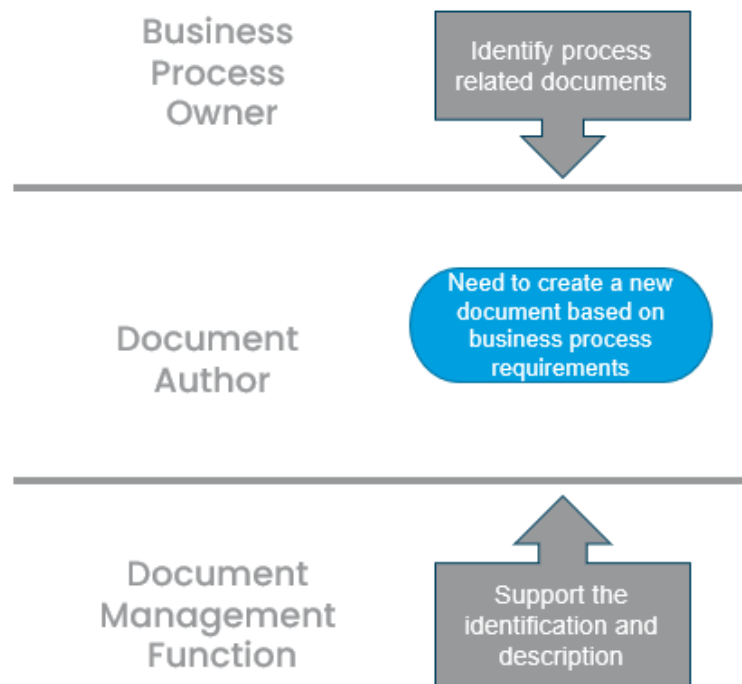


Figure 11 Interfaces of the Process Input Phase

5.2.2 Initiation phase

Discussions continued with reviewing the identified weaknesses in the initiation phase, particularly focusing on improving the integration of the document management process into the business process, drawing insights from the Literature Research. The ideas and proposals were collected to improve this phase and provide clarity on associated responsibilities. These proposals were gathered from the discussions and summarised in Table 8.

Table 8 Ideas and Proposals to Improve Initiation Phase

No.	Ideas & Proposals	Responsible
1	Document management terms need further explanation.	Document Management Function
2	Common metadata to all documents needs to be defined.	Document Management Function
3	Describe how the documented information should be managed during its lifecycle. → Document type-specific metadata for each document type needs to be defined.	Business Process Owner
4	Metadata management, including adding, modifying, and removing document metadata needs to be established	Document Management Function
5	Document identification methods need to be defined and implement	Document Management Function
6	Document type-specific template based on the general templates needs to be created.	Business Process Owner
7	Template management needs to be established	Document Management Function

During the discussions related to initiation phase, it became clear that terms such as "metadata" and its utilization were not well understood and required further explanation. This aspect was thoroughly discussed with other document management professional, leading to the recognition that while there are some basic sets of metadata common to all types of documents, there are also document type-specific metadata that must be identified to effectively manage and utilize the entire lifecycle of a document type. Discussions with various stakeholders showed that better collaborating with the process owner to manage a document full lifecycle could lead to a comprehensive understanding of the metadata required for a document type.

Meanwhile, the Document Management Function should oversee metadata management, including the establishment of different processes for adding, modifying, and removing document metadata. The objective of metadata management should be to maintain metadata harmonization and facilitate

document management operations. ITIL Service Management implementation could help to clarify the value creation of metadata management.

Based on the Literature Research, it was agreed during the discussions that roles and responsibilities need to be clearly defined. Consequently, the Document Management Function should be responsible for establishing standardized and basic set of metadata requirements for all documents and implementing document identification methods to standardize them across the organization. In turn, the Business Process Owners are responsible for describing how the documented information should be managed during its lifecycle.

During the document initiation phase, it is essential to determine if a specific type of document requires a template. It was commonly discussed that to ensure standardised template management practices, the management of templates should be centralized under the Document Management Function. Document Management shall oversee the stabilization of templates into centralized storage and provide necessary tools for template creation. Subsequently, the Business Process Owner is accountable for crafting clear and informative template content, streamlining the documentation process.

Interfaces of the initiation phase between the Business Process Owner and the Document Management Function are illustrated in Figure 12.

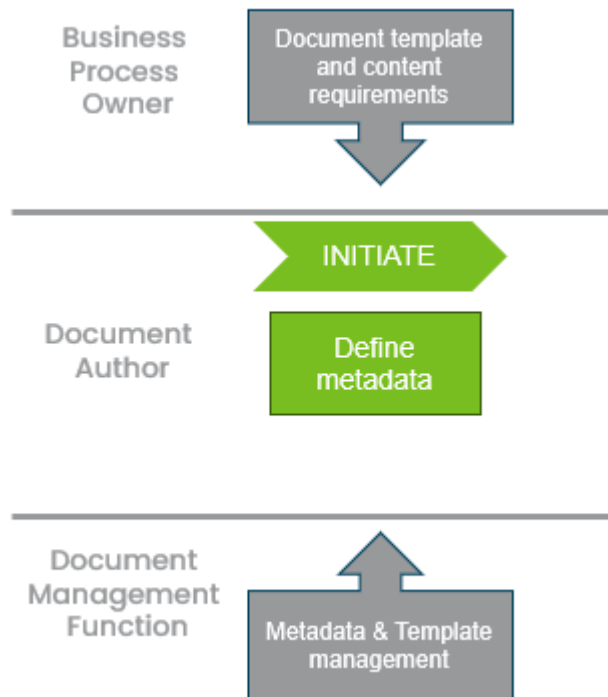


Figure 12 Interfaces of the Process Initiation Phase

5.2.3 Editing phase

Discussions proceeded with reviewing the identified weaknesses in the editing phase and best practices to improve this phase. The ideas and proposals were developed to improve this phase and provide clarity on associated responsibilities. These proposals were gathered from the discussions and summarised in Table 9.

Table 9 Ideas and Proposals to Improve Editing Phase

No.	Ideas & Proposals	Responsible
1	Automatised tracking of changes in documents needs to be implemented	Document Management Function
2	Proper access rights per document type need be predefined	Business Process Owner
3	Access rights need to be automatised based on requirements	Document Management Function
4	Information sensitivity needs to be defined	Business Process Owner

During discussions, the need for automatic change tracking in documents was identified. This feature would enhance transparency and accountability in document management processes by providing a detailed history of modifications made to document content over time. Additionally, there was consideration about enabling document modifications for only one user at a time or for multiple users when necessary.

Furthermore, there was discussion about the feasibility of predefining document access rights by the Process Owner and automating this process to prevent user errors in evaluating proper accesses. The Business Process Owner should be responsible for evaluating the sensitivity of the information based on business requirements and establish necessary restriction rules for the document type in advance to prevent unauthorized access to confidential information. The Business Process Owner is also responsible for requesting changes to current practices if any modifications to the restriction rules are required.

Indicated documents in the business process flow charts can facilitate an understanding of the overall time required to perform the entire process and its associated documents. This transparency can prompt supervisors to allocate more time for creating well-structured and comprehensive documents, thereby improving the overall efficiency of the process. Additionally, discussions highlighted the potential time-saving benefits of using predefined and well-structured templates. These issues related to development ideas and proposals are already documented in Table 7, item 1, and Table 8, item 6.

Interfaces of the editing phase between the Business Process Owner and the Document Management Function are illustrated in the Figure 13.

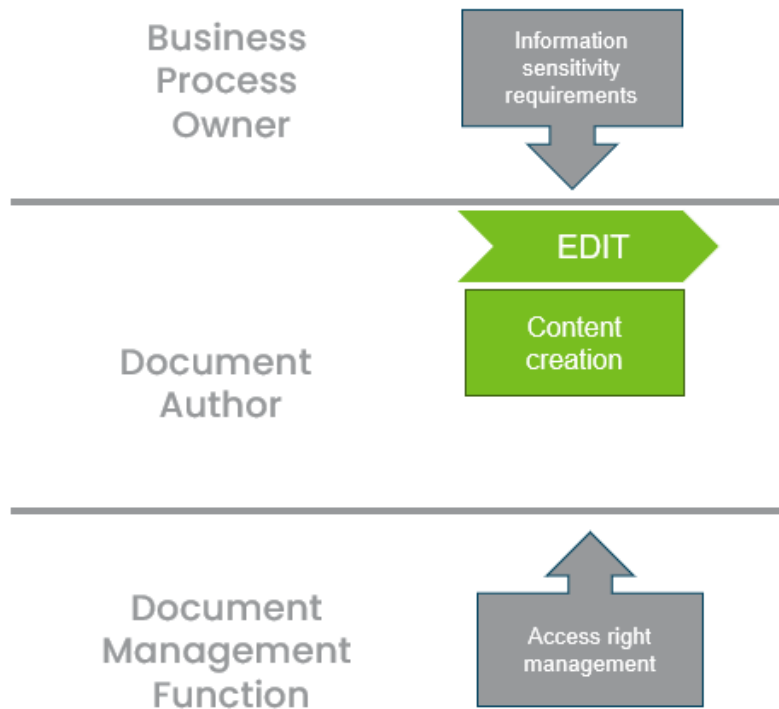


Figure 13 Interfaces of the Process Editing Phase

5.2.4 Review and Approval phase

Further discussions focused on developing the document review and approval phase. The recommendations and proposals were developed to improve this phase and provide clarity on associated responsibilities. These suggestions were gathered from the discussions and summarised in Table 10.

Table 10 Ideas and Proposals to Improve Review and Approval Phase

No.	Ideas & Proposals	Responsible
1	Review and approval responsibilities need to be defined	Business Process Owner
2	Review and approval scope needs to be defined	Business Process Owner
3	The review and approval workflow needs to be implemented	Document Management Function
4	Electronic signing tool use needs to be expanded and integrated with DMS	Document Management Function

In one-to-one meetings, it was highlighted that it is crucial not only to appoint the reviewer and approver but also to clearly define the review and approval requirements. This causes specifying what aspects of the documents are expected to be reviewed and approved, including document management-related requirements such as ensuring metadata accuracy and verifying that the document content contains all necessary data.

Therefore, it was proposed that the Business Process Owner take on the responsibility of determining whether the document necessitates review and approval, as well as by whom. Additionally, they should specify the critical information within the document content and metadata that requires review and approval. The Document Management Function should be responsible for appropriate workflow implementation to facilitate the review and approval process effectively.

The electronic signing tool has proven to be useful, leading to discussions about its potential expansion for use with other document types beyond contracts in the future and the possibility of integrating it into the document management system.

Interfaces of the review and approval phase between the Business Process Owner and the Document Management Function are illustrated in Figure 14.



Figure 14 Interfaces of the Process Review and Approval Phase

5.2.5 Storing phase

Discussions related to the development of the document storing phase focused on ensuring that sensitive information is protected from unauthorized access. The recommendations and proposals were developed to improve this phase and provide clarity on associated responsibilities. These suggestions were gathered from the discussions and summarised in Table 11.

Table 11 Ideas and Proposals to Improve Storing Phase

No.	Ideas & Proposals	Responsible
1	Document accurate storage needs to be monitored	Business Process Owner
2	DMS needs to be defined and implemented for document-accurate storage	Document Management Function

3	Link between group-level documents in other systems and centralized DMS needs to be implemented	Document Management Function
----------	---	------------------------------

During the discussion, it was emphasized that the Business Process Owner should take responsibility for ensuring that documents are stored in the appropriate location and for establishing methods to monitor them. This approach would ensure that documents are stored according to the Business Process Owner's requirements and can be easily accessed when needed.

Throughout the discussions, it became evident that there is a need for a unified document storage system that provides the necessary functionalities to facilitate efficient document management. While certain documents may still be housed in company group-level systems, the suggestion was made to link and display them within a centralized document management system for improved accessibility.

The Document Management Function should be responsible for defining and implementing the Document Management System, which includes determining where and how documents should be stored to maintain centralized storage and prevent duplication. Additionally, the Document Management Function should establish methods for effectively managing permissions.

Interfaces of the process storing phase between the Business Process Owner and the Document Management Function are illustrated in Figure 15.

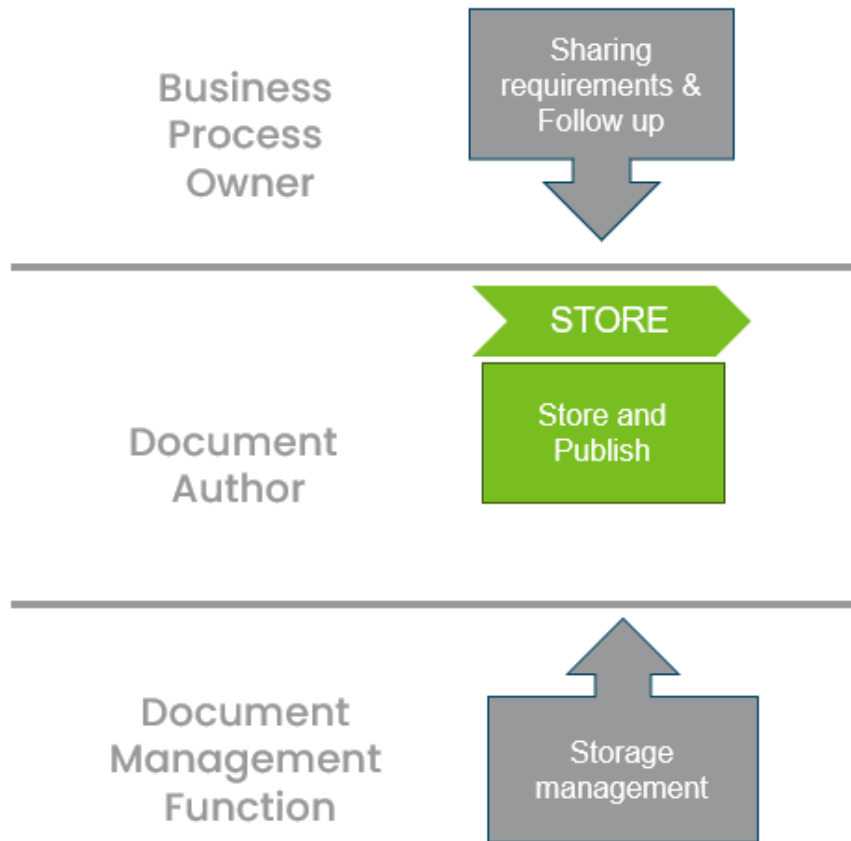


Figure 15 Interfaces of the Process Storing Phase

5.2.6 Usage phase

Further discussions focused on developing the document usage phase. The recommendations and proposals were developed to improve this phase and provide clarity on associated responsibilities. These suggestions were gathered from the discussions and summarised in Table 12.

Table 12 Ideas and Proposals to Improve Usage Phase

No.	Ideas & Proposals	Responsible
1	Potential stakeholders who may require access to the documents need to be identified	Business Process Owner
2	Requirements for reports need to be defined	Business Process Owner
3	Reports need to be established	Document Management Function

During the discussions, it was recognized that the Business Process Owner should take on the responsibility of identifying potential stakeholders who may require access to the document in the future and ensuring they are aware of its existence.

In the other hand, the Document Management Function is responsible for implementing appropriate publishing channels for both internal and external stakeholders, when applicable. This ensures accurate tracking of which documents and versions have been published or delivered and to whom.

The Business Process Owner should determine which business processes utilize the document as input for specific purposes and define any requirements for creating reports based on document metadata, such as monitoring process performance. The Document Management function is then responsible for implementing the necessary reports as per the defined requirements.

Interfaces of the process usage phase between the Process Owner and Document Management are illustrated in Figure 16.

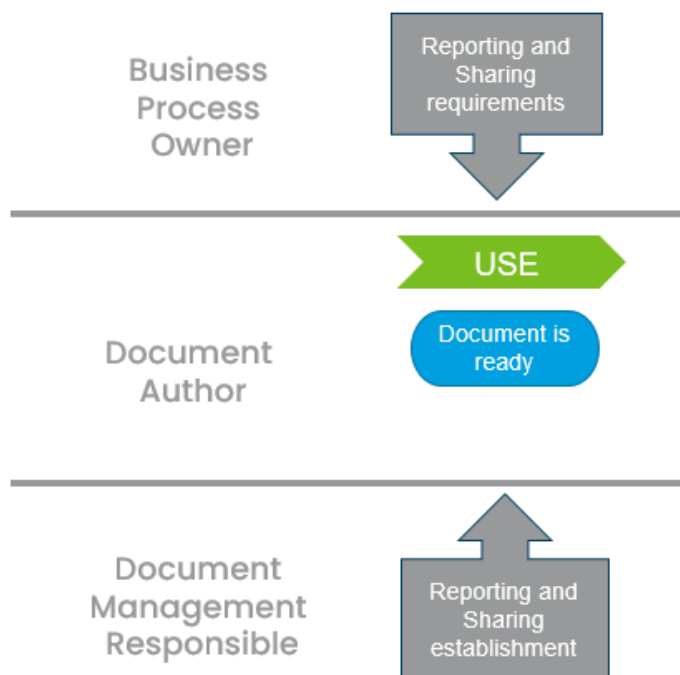


Figure 16 Interfaces of the Process Usage Phase

5.2.7 Revising phase

Discussions proceeded with reviewing the identified weaknesses in the review and approval phase and best practices to improve the phase. The recommendations and proposals were developed to improve this phase and provide clarity on associated responsibilities. These suggestions were gathered from the discussions and summarised in Table 13.

Table 13 Ideas and Proposals to Improve Revising Phase

No.	Ideas & Proposals	Responsible
1	The review period for published documents needs to be defined when applicable	Business Process Owner
2	Requirements for verifying the validity of documented information content need to be defined.	Business Process Owner
3	Follow-up of the document review period process needs to be defined	Business Process Owner
4	Standardised version and revision management principles, methods, and tools need to be defined and implemented.	Document Management Function
5	Minimum content requirements for documents need to be defined	Document Management Function

During the discussions, it was highlighted that the Process Owner should be responsible for defining the review period for published documents, if applicable, and establishing requirements for verifying the validity of documented information content. If a review period is required, the Process Owner is also responsible for overseeing these reviews.

The Document Management Function should be responsible for defining common revision and version management principles, methods, and tools to ensure the reliability of documents and facilitate tracking of changes. Additionally, the Document Management Function should define the minimum content requirements for documents, including revision tables displaying changes and associated information from previous revisions.

Interfaces of the process revising phase between the Process Owner and Document Management are illustrated in Figure 17

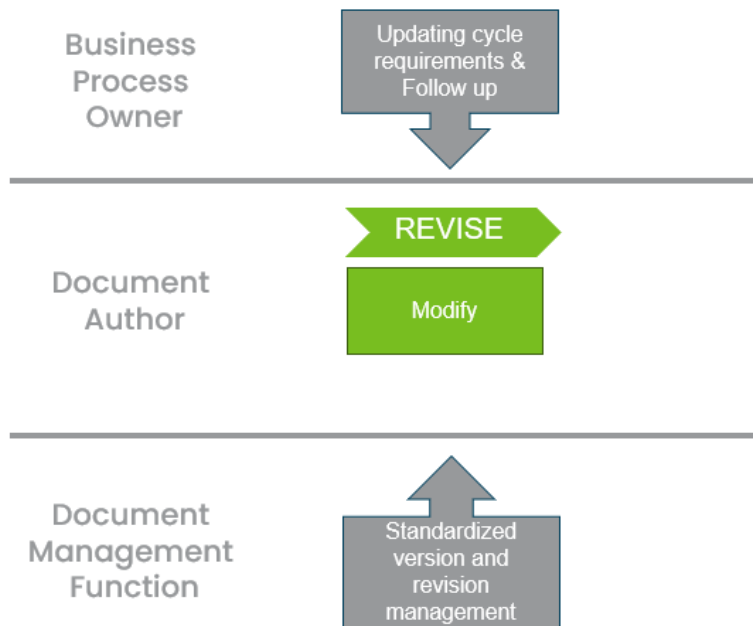


Figure 17 Interfaces of the Process Revising Phase

5.2.8 Archiving and Destroying phase

Discussions continued focusing on developing the document archiving and destroying phase. The recommendations and proposals were developed to improve this phase and provide clarity on associated responsibilities. These suggestions were gathered from the discussions and summarised in Table 14.

Table 14 Ideas and Proposals to Improve Archiving and Destroying Phase

No.	Ideas & Proposals	Responsible
1	Document retention times need to be defined	Business Process Owner
2	Rules to destroy documents need to be defined	Business Process Owner
3	Archiving principles, methods and tools needs to be defined and implemented	Document Management Function
4	Destroying principles, methods, and tools need to be defined and implemented	Document Management Function

In the discussions, it was highlighted the Business Process Owner should be responsible for determining document retention times and ensuring compliance with any changes in related requirements to avoid the risk of losing any critical information or non-compliance with legal and regulatory requirements. The Business Process Owner should establish rules to destroy the document and determine whether approval from the relevant personnel is required for the document-destroying process.

Concurrently, The Document Management Function should be responsible for defining archiving and destroying principles, methods, tools, and processes based on the requirements provided by the Business Process Owners.

Interfaces of the process archiving and destroying phase between the Business Process Owner and the Document Management Function are illustrated in the

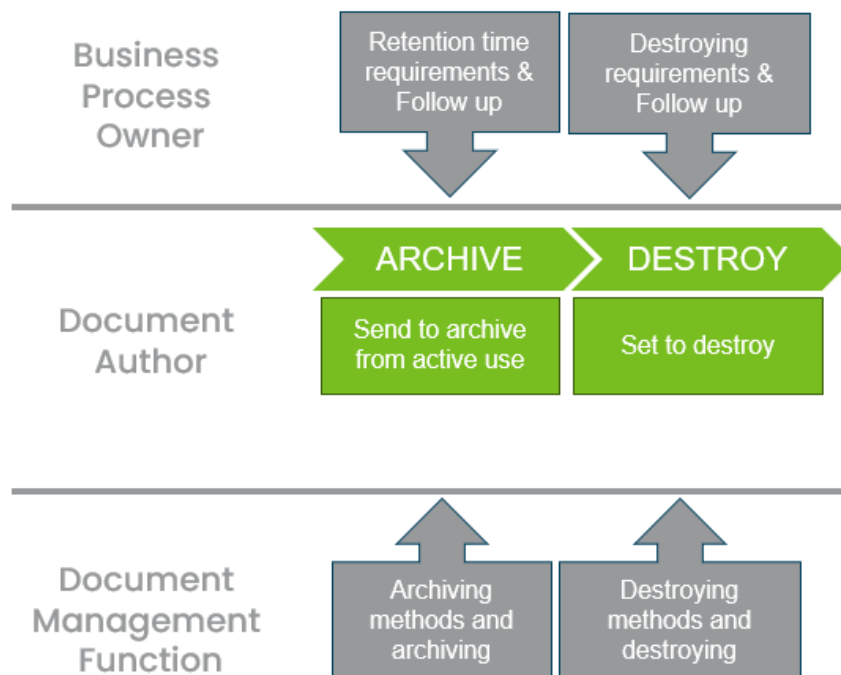


Figure 18.

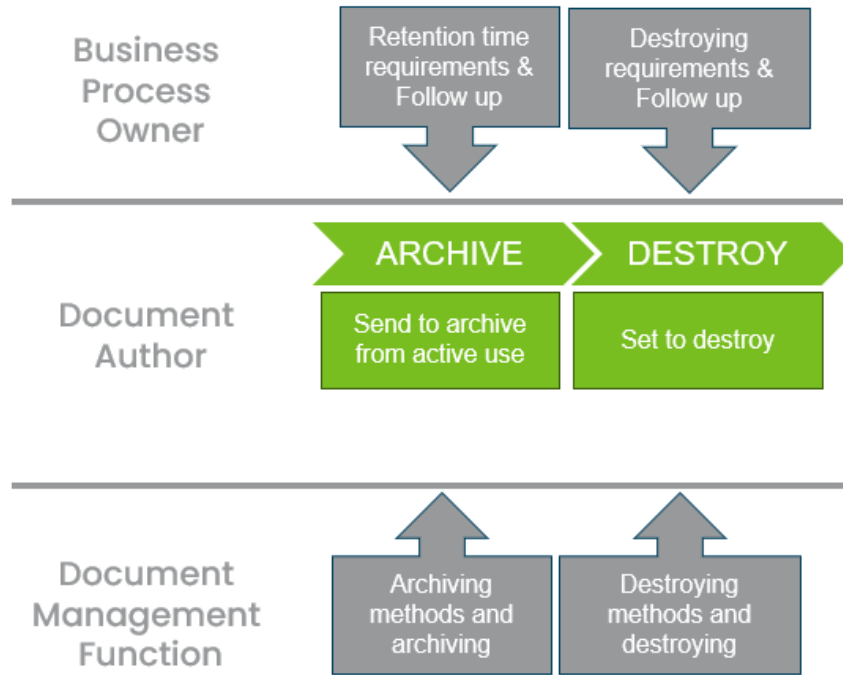


Figure 18 Interfaces of the Process Archiving and Destroying Phases

5.2.9 Document Management System

The final agenda item was to review weaknesses related to the document management system and discuss improvement ideas. The recommendations and proposals were developed to improve this phase and provide clarity on associated responsibilities. These suggestions were gathered from the discussions and summarised in Table 15.

Table 15 Ideas and Proposals to Improve Document Management System

No.	Ideas & Proposals	Responsible
1	DMS needs to be developed	Document Management Function
2	DMS needs to be maintained	Document Management Function
3	DMS needs to be supported	Document Management Function
4	DMS needs to be trained and guided	Document Management Function
5	DMS needs to be protected from disasters and system failures	Document Management Function

While discussing, it was proposed that the Document Management Function should be responsible for developing, operating, and maintaining the document management system that meets the requirements of both business processes and standard document management principles. The Document Management Function should also oversee system support and provide user training and guidance.

Document management system should be protected from events such as disasters, data breaches, and system failures by the Document Management Function.

Interfaces of the document management system between the Business Process Owner and the Document Management Function are illustrated in Figure 19

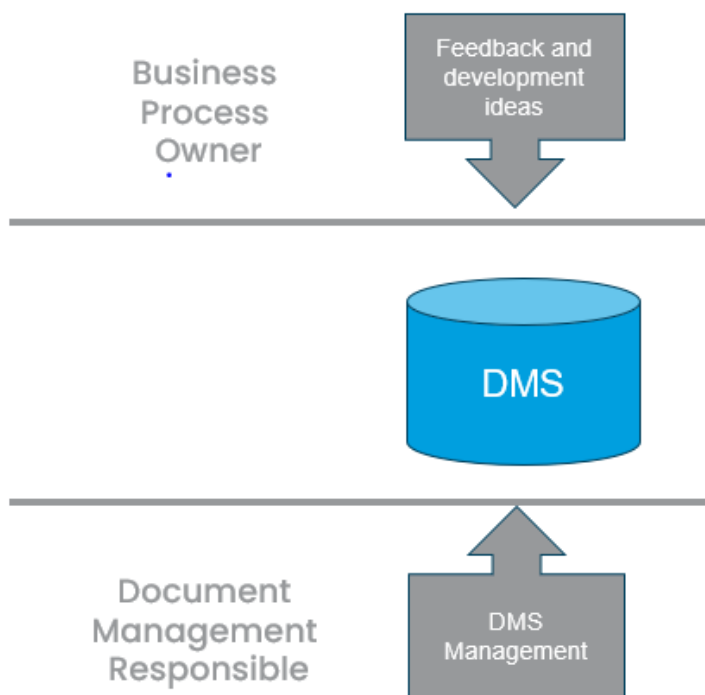


Figure 19 Interfaces of Document Management System

5.3 Summary of the Initial Guidelines

The creation of the Initial Guidelines to improve the document management process primarily developed through collaborative one-to-one discussions with input from stakeholders. The Initial guidelines are based on insights from the Current State Analysis with knowledge gathered from the Literature Research.

During the process of creating the Initial Guidelines, the focus was primarily on the detailed level of clarifying tasks and related responsibilities identified in the Current State Analysis. However, it became evident through discussions that align with the Literature Research, there is a need for a broader focus on overall and continuous process improvement to support the integration of these processes in the long run. Consequently, it was concluded that incorporating service management practices from the Literature Research could improve the wider scope of the document management process.

Throughout Section 5, interfaces between the Business Process Owner and Document Management Function were illustrated to describe needed collaboration and responsibility assignment to improve each process phase. These improvement ideas align with the Literature Research, which emphasizes enhancing process integration, clarifying the scope, and clarifying responsibilities and relationships within the document management process to drive organizational efficiency and effectiveness.

To continue this work, the ideas and proposals were collected and documented in the previous chapters in this section. Figure 20 concludes the Initial Guidelines to improve the document management process with clarified responsibilities, scope, and interfaces.

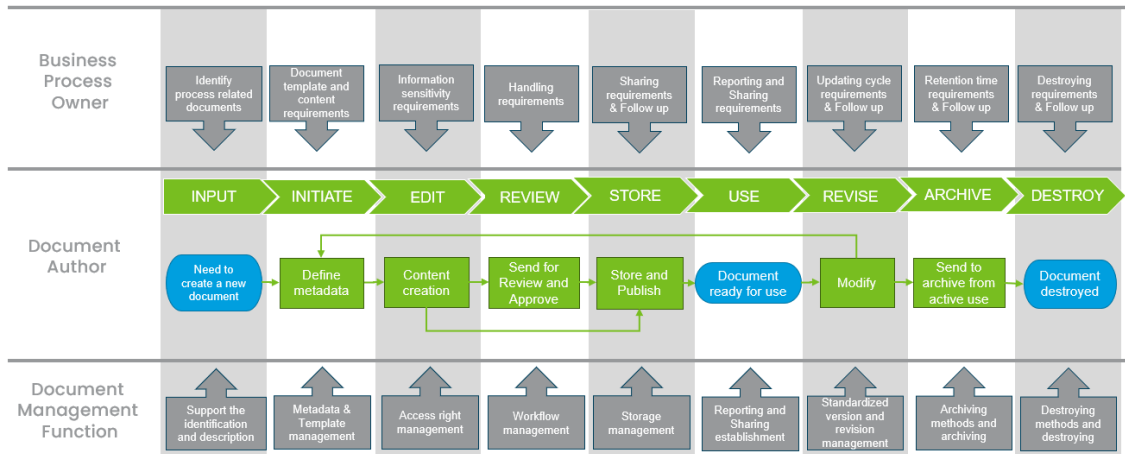


Figure 20 Summary of Document Management Interfaces

To ensure a broader focus on overall and continuous improvement of the process it was agreed that document management needs to be improved as a service. Figure 21 illustrates the overall guidelines to continuously maintain and improve the document management process through the ITIL service management framework.

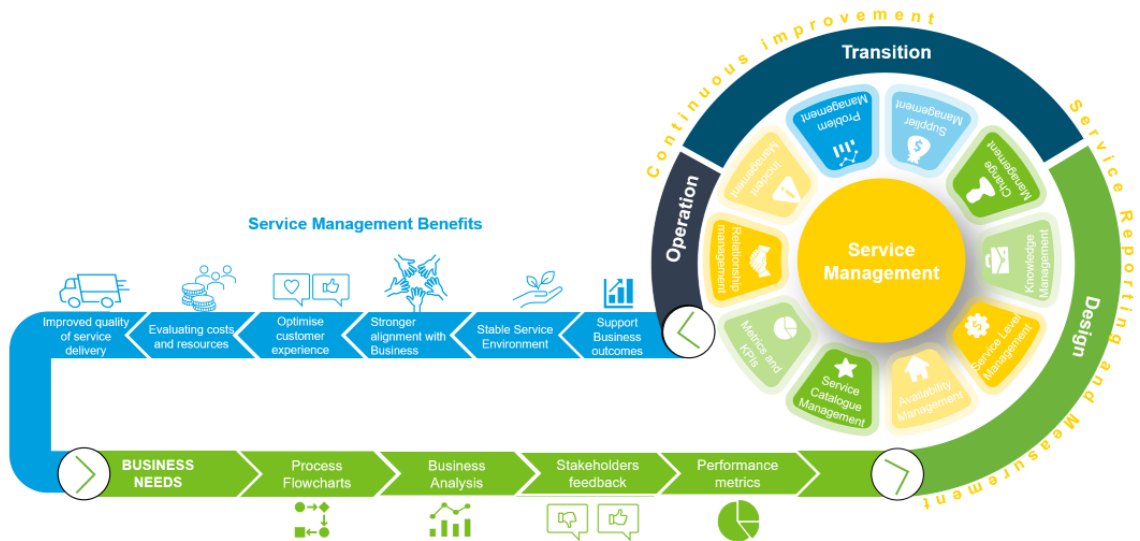


Figure 21 Overview to Improve Document Management Process as a Service

As illustrated in Figure 21, the service management process begins with the identification of new or changing business needs. ITIL provides various practices

such as business analysis and stakeholder feedback to identify these needs systematically and proactively.

The service is then designed and transitioned into operation. Several practices, including service catalog management, change management practices, and supplier management, can be utilized to improve service implementation and maintenance. The benefits of implementing document management as a service include for example improved business outcomes, stronger alignment with business objectives, optimized customer experience, and improved quality of service delivery.

6 Validation of the Initial Guidelines

Section 5 introduced the Initial Guidelines, developed collaboratively with key stakeholders. This section provides an overview of the validation process used to refine the Initial Guidelines into final ones for the Case Company. Following the completion of the validation process, the observation of the Initial Guidelines was summarized.

6.1 Overview

The validation process for the Initial Guidelines involved one main workshop with selected stakeholders and one smaller one-to-one discussion. The main workshop brought together eleven key stakeholders, primarily from process development and project management teams. This workshop was organized as a face-to-face meeting, with a few participants joining online via Teams.

During the workshop, the Initial Guidelines were introduced through a presentation. This presentation outlined the weaknesses identified in the Current State Analysis of the process and explained how the Initial Guidelines were constructed based on the Current State Analysis and the Literature Research. The presentation concluded with a process chart illustrating the various responsibilities and action points for both process owners and the Document

Management Function. These topics were thoroughly discussed during the workshop.

The one-to-one discussion focused on the ITIL methods used in the Case Company and the possible integration of document management into those methods. This discussion followed the same structure as the workshop, presenting the Initial Guidelines, the Current State Analysis and the Literature Research that led to these Initial Guidelines.

Throughout the workshop and discussions, observations and comments were documented and captured as field notes.

6.2 Feedback received from the Initial Guidelines

Overall, stakeholders expressed satisfaction with the Initial Guidelines, noting their practicality in clarifying process responsibilities and interfaces, as well as defining the scope of the documents to be managed. During the validation workshop, no comments were made regarding the guidelines related to process phases, indicating general acceptance of this aspect of the overall process.

The workshop primarily focused on discussing the next steps and the implementation phase of the guidelines. Stakeholders emphasized that certain deficiencies in the current business process descriptions could potentially hinder the future implementation of the guidelines.

However, during the discussions it was highlighted that there are considerable number of tasks to be done, prompting suggestions to streamline explanations of these tasks and prioritize them effectively to support and prepare for the implementation phase.

It was proposed to begin by developing a service catalog to precisely define the scope of document management-related tasks and responsibilities. Additionally, it is crucial to initiate the definition of document management principles and

methods right from the outset. To initiate the process effectively, it is necessary to compile and prioritize the most critical information requiring management.

The priorities discussed included implementing a document identification method, establishing an automated change tracking system, and defining information sensitivities for each document type. Other crucial steps include establishing review and approval workflows, deploying a document management system for accurate storage, and defining document-specific content requirements for quality assurance. Additionally, implementing version and revision management principles, identifying stakeholders requiring document access, and setting minimum content requirements are essential tasks.

The discussions highlighted that archiving practices may not be critical in the initial phase, as documents might still be actively needed. However, there is a pressing need to ensure proper deletion of documents, particularly to comply with GDPR requirements. Finally, attention was drawn to the urgent need for implementing the Document Management System (DMS) and ensuring its maintenance, support, and development to facilitate the implementation of remaining tasks effectively.

6.3 Summary of the Final Guidelines

The Final Guidelines to improve the document management process in the Case Company are presented in the following Figure 22.

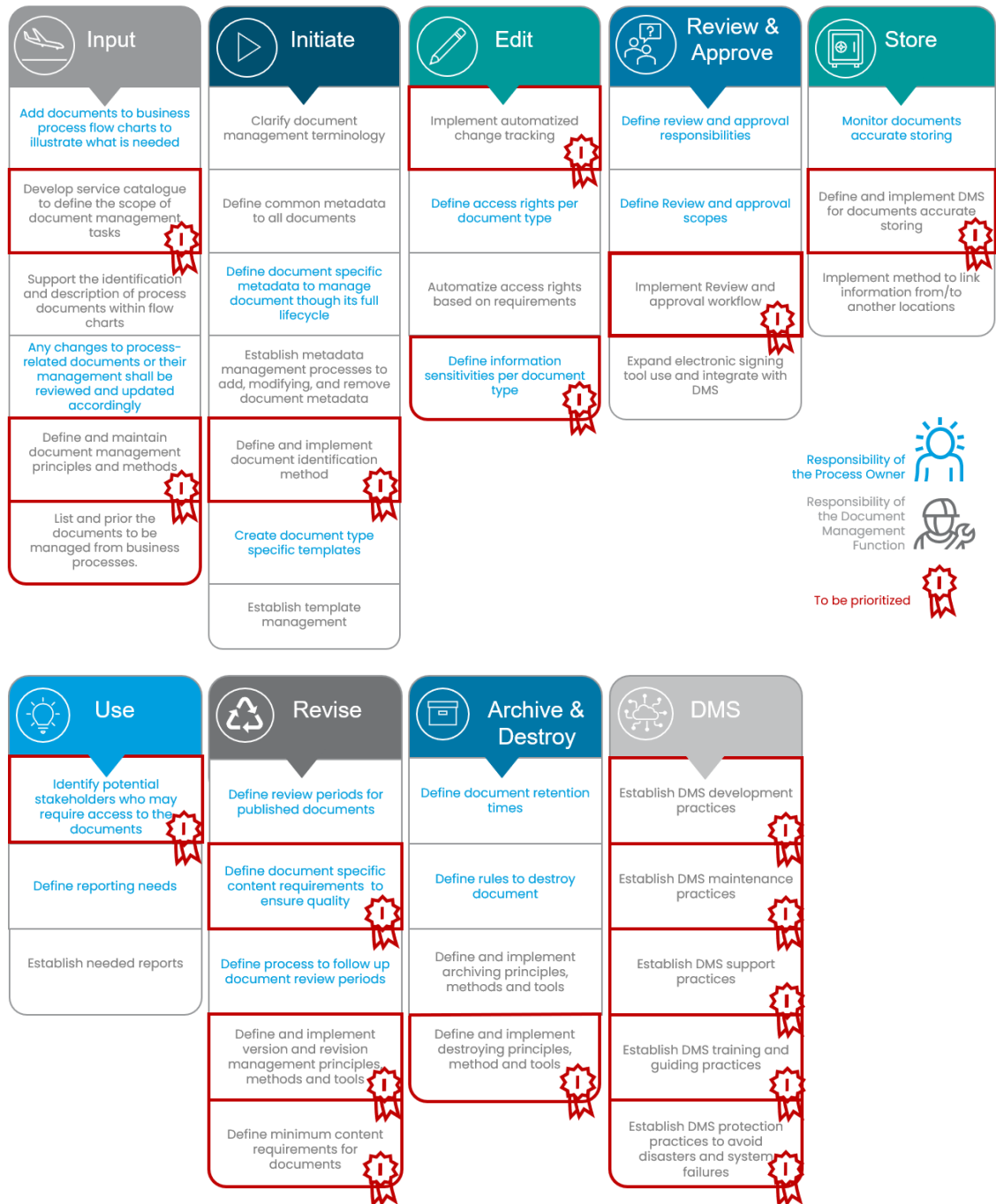


Figure 22 The Final Guidelines with Prioritized Ideas and Proposals

As presented in Figure 22 the ideas and proposals have been streamlined for easier adaptation, with key issues highlighted in red for prioritization.

The next section of the study summarizes the key findings and results, outlining the steps for implementing the developed guidelines into action. It also includes a self-evaluation and concluding remarks.

7 Discussion & Conclusions

The closing section summarizes the key findings and results presented in the study. This section is divided into three subchapters. It begins with an executive summary of the writing process, followed by a comprehensive self-evaluation of the research, which includes references to relevant literature and definitions. This section concludes the thesis with closing words.

7.1 Executive summary

The Case Company is operating in the forest industry and has established a new Unit to address the increasing demand for bio-based alternatives. However, the lack of standardized document management processes within this Unit resulted in challenges such as information silos and inconsistent handling. Therefore, the objective of this study was to develop guidelines to improve the document management process within the new Unit.

The study consists of seven sections, beginning with an introduction and project plan. It includes the Current State Analysis of the document management processes, the Literature Research, and the guidelines to improve the existing process. These guidelines were validated with feedback from various stakeholders. In closing, the study outlines recommendations for future actions and includes a self-evaluation. It is important to note that the study's scope is limited to analysing the current situation and suggesting improvements, rather than conducting implementation or further development.

In the context of this study, aiming to improve the document management process, the applied action research approach was chosen. This approach focuses on changing practices and understanding the cause-effect relationship to implement effective solutions. The research design consists of four phases: analysing the current state, conducting literature research, improving guidelines based on findings, and validating the guidelines. Interviews with key stakeholders

were utilized throughout these stages to gather comprehensive insights and ensure the proposed improvements align with organizational objectives.

Overall, the chosen research approach and methodology were essential for guiding the study toward meaningful outcomes and actionable guidelines to address the challenges faced by the organization in document management.

The Current State Analysis provided an in-depth analysis of the current document management process, outlining both its strengths and weaknesses. Data was collected through interviews with stakeholders ensuring a comprehensive understanding of the issue. The process was visually presented in a flow chart, highlighting key phases such as process input, initiation, editing, storage, review and approve, use, revise, archive, and destroy.

The Current State Analysis highlighted various weaknesses across separate phases of the process. It became evident that these weaknesses are due to a lack of integration between document management and business processes, alongside unclear scope for managed documents and undefined responsibilities. These issues serve as the root cause for the identified weaknesses. To effectively address these issues, prioritizing alignment with business processes was crucial. This understanding led to the decision to focus on the root causes, creating the base for the development of the Initial Guidelines.

The Literature Research explored potential best practices and ideas to mitigate the identified weaknesses from the Current State Analysis. It presents an ITIL framework for managing document management as a service to improve process integration. Additionally, it offers an idea to further develop process flow charts and perform business analysis to efficiently identify documents and clarify the

scope. Furthermore, to clarify responsibilities and relationships, the Literature Research introduces three ITIL frameworks: service catalog management, relationship management, and organizational governance practices.

The Initial Guidelines to improve the document management process were developed through collaboration with stakeholders, based on both the Current State Analysis and the Literature Research. The Initial Guidelines are structured based on the separate phases of document management, aiming to improve integration, clarify scope, and assign responsibilities. The adoption of the ITIL framework for service management was recommended to tackle these challenges effectively.

Each phase of the document management process follows proposals and ideas for improvement, along with a clear definition of responsibilities between the Business Process Owner and the Document Management Function. The importance of collaboration between the Business Process Owner and the Document Management Function is emphasized throughout, with clear interfaces illustrated for each phase of the process. Overall, the Initial Guidelines highlight the need for a structured approach to document management, with a focus on continuous improvement and alignment with organizational goals.

Lastly, the Final Guidelines were developed in collaboration with key stakeholders during a joint workshop. Stakeholders expressed satisfaction with the Initial Guidelines, and the workshop primarily focused on preparations for the implementation phase. Consequently, the Final Guidelines aimed to streamline ideas and proposals for easier adaptation, highlighting key issues for prioritization.

7.2 Recommendations for next steps

The study reached its culmination with the development of the Final Guidelines to improve the document management process in the Case Company. Furthermore, the roadmap was developed to provide a comprehensive plan for establishing, maintaining, and developing Final Guidelines.

Initiating this process necessitates leadership commitment and a clear prioritization of processes based on information necessity. Establishing document management as a service requires the appointment of a Service

Owner to lead the service implementation and monitoring work and a dedicated team to execute the service. These foundational steps are essential for laying the groundwork and ensuring the successful implementation and sustainability of document management services within the organization.

Moving forward, efforts could be directed toward enhancing the presented document management process by collaboratively identifying documents with business process owners and clarifying roles and responsibilities in accordance with the guidelines. Subsequently, service management will take the responsibility for maintaining and advancing this work.

The next steps are summarised in the following Figure 23 to illustrate the roadmap to continue and build up the service practicalities for document management.

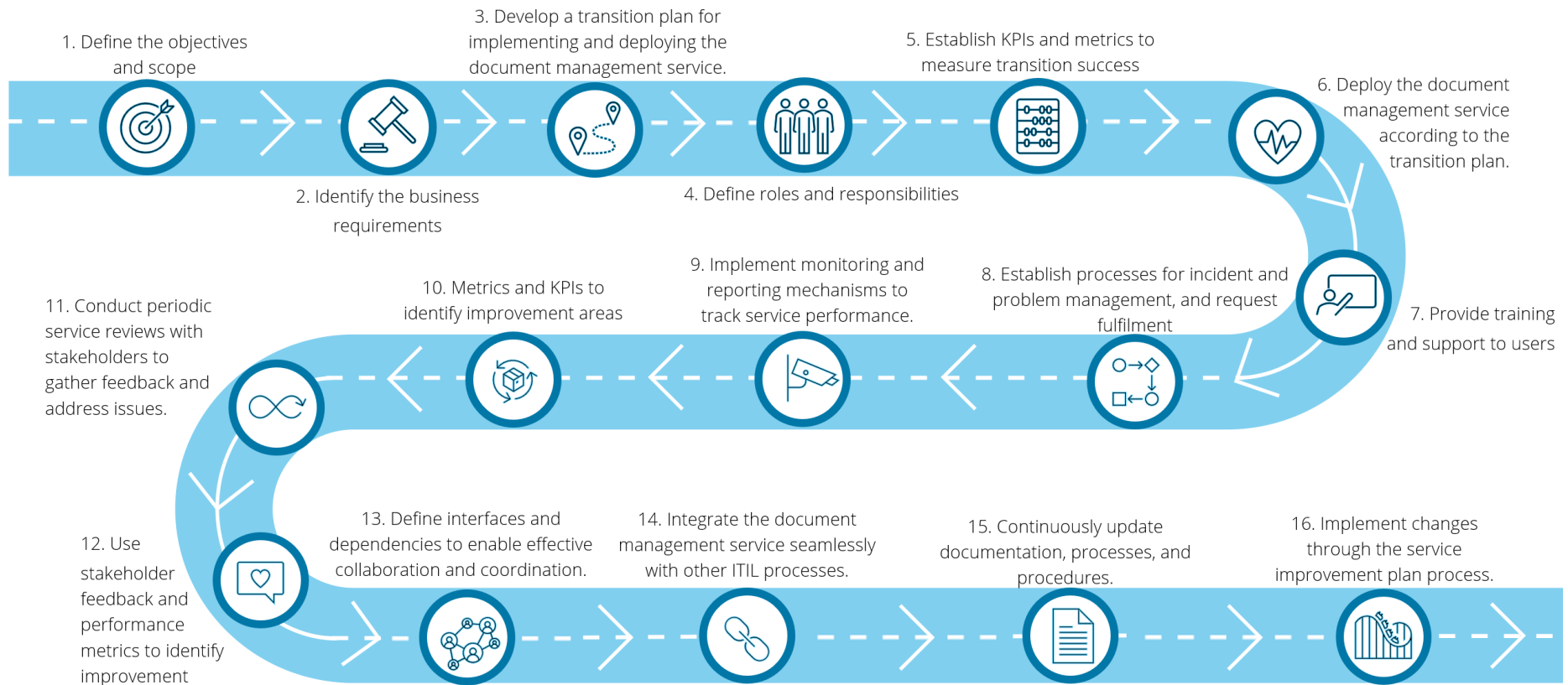


Figure 23 Roadmap to Improve Document Management as a Service

As presented in Figure 23 the document management service implementation should start with the definition of the service, outlining its objectives and scope. Next, identification of business needs and responsibilities, in collaboration with business process owners as outlined in the Final Guidelines. A transition plan must be established to ensure the successful implementation of the new service, alongside clear metrics to measure transition success. During the transition, deployment, and training of stakeholders on the service are critical.

Since the service includes a document management system that requires development and maintenance, proper incident and problem management processes must be set up to address any disasters or system failures. Monitoring and reporting of service performance through metrics and KPIs are necessary to estimate service success and identify areas for improvement through stakeholder feedback.

Understanding internal and external interfaces is critical to facilitate smooth cooperation and coordination of the service. Identifying potential connections to other ITIL services or IT departments within the company is crucial to ensure seamless service continuity. For instance, consider a cloud-based document management system that relies on internet connectivity to function. In the event of an internet outage, the document management system would also become unavailable, highlighting the interdependence between different functionalities. By recognizing and understanding these relationships, organizations can better anticipate and mitigate potential disruptions to their services.

Finally, all documents, processes, and procedures must be updated whenever changes are made to the service to maintain up-to-date and reliable information. If changes to the service are required, the process should begin again, with all relevant phases evaluated and implemented to ensure a successful service that provides value for its customers.

By following this roadmap, which incorporates various ITIL practices, the Final Guidelines to improve the document management process could be effectively implemented, maintained, and developed.

7.3 Self-evaluation of thesis project credibility

In this chapter, a critical self-evaluation is conducted on the process involved in performing the study, including the research methods utilized, the challenges faced, and the lessons learned throughout the journey. This self-evaluation aims to assess the strengths and weaknesses of the research process and identify areas for future improvement.

The primary objective of this study was to create guidelines to improve the document management process for the Case Company. This objective was systematically followed, resulting in the successful development of guidelines containing improvement proposals and ideas for further implementation.

The study addresses a business challenge of the Case Company by utilizing applied action research methods to form practical solutions. Reflecting on the research methods used, it was found that the qualitative data collection techniques, including one-to-one interviews, small group discussions, and workshops provided a comprehensive understanding of the research topic and process transparency. Data were collected from various stakeholders to ensure comprehensive and accurate data collection, thus improving the validity of the study's findings. These methods allowed for the exploration of diverse perspectives and ensured that individual opinions were not overshadowed in larger group settings. However, I acknowledge that there may have been limitations in the representativeness of the sample and potential biases in the data collection process.

The study follows a logical and systematic structure approach from the beginning until the end. It begins by identifying the root causes of the process weaknesses examining the improvement ideas from the Literature Research and selecting some of these to improve the process.

The identification of root causes was challenging and time-consuming, resulting in a delay as the Literature Research initially focused on the wrong topic. Nevertheless, it was crucial to successfully create guidelines that focus on

addressing the root causes of the weaknesses in the document management process and to identify appropriate frameworks for improvement.

This research study has provided me with valuable knowledge that I will carry forward into my future academic and professional endeavors. Firstly, I learned the importance of illustration in research, particularly when faced with unexpected challenges. Additionally, I gained insights into the intricacies of qualitative data analysis and the importance of rigor and thoroughness in this process. Moreover, I developed stronger communication and people skills through interactions with research participants and stakeholders.

Reflecting on the strengths of this study, I am proud of the comprehensive understanding of the research topic that was achieved through the Current State Analysis and the Literature Research.

Moving forward, there are several areas for improvement and future research directions that have emerged from this study. These include exploring additional data collection methods, such as focus groups or observational studies, to further enrich the data. Additionally, conducting longitudinal studies to assess the long-term impacts of the implemented recommendations would provide valuable insights into the sustainability of the proposed solutions.

7.4 Closing words

In conclusion, this study has explored various approaches for enhancing the document management process within the Case Company. Through the Current State Analysis and the Literature Research, there were identified key focus areas for improvement and proposed actional guidelines to address them.

Document management plays a pivotal role in modern business operations, facilitating efficient information retrieval, collaboration, and compliance. However, as organizations continue to face new challenges and complexities, it is essential to continually adapt and improve document management processes to remain competitive and resilient in today's dynamic landscape.

By implementing the guidelines outlined in this study, organizations can streamline their document management workflows, enhance data security, and optimize information accessibility. Moreover, these improvements can contribute to increased productivity, reduced risks, and enhanced decision-making capabilities.

To conclude this journey, let us remember that effective document management is not just a technical effort but a strategic necessity that requires ongoing commitment, collaboration, and innovation. I am confident that the insights gained from this study will drive a positive change and inspire further improvements in document management practices.

In closing, I would like to express my sincere gratitude to all those who have supported and contributed to my journey to write this study. May the findings of this study smooth the way for a future where document management is not just a necessity but a source of competitive advantage and organizational excellence.

References

AXELOS. (2019) ® *ITIL Foundation ITIL 4 Edition*. TSO (The Stationery Office), part of Williams Lea.

Cartlidge A. (2022). *ITIL4 Foundation Revision Guide*. TSO (The Stationery Office), part of Williams Lea.

Gallacher L. and Morris H. (2012). *ITIL Foundation Exam Study Guide*. John Wiley & Sons, Incorporated.

Halper, F., Bloor, R., Hurwitz, J., Kaufman M. (2009) *Service Management for Dummies*. Wiley Publishing, Inc.

Kananen, J. (2013). *Design Research as Thesis Research (Applied Action Research): A practical guide for Thesis research*. JAMK University of Applied Sciences.

McKinsey & Company (2019). *Pulp, paper, and packaging in the next decade: Transformational change*. Available at:
<https://www.mckinsey.com/industries/packaging-and-paper/our-insights/pulp-paper-and-packaging-in-the-next-decade-transformational-change>. Accessed on 12.12.2023.

Rhem A.J. (2022) *Knowledge Management in Practice*. CRC Press Taylor & Francis Group.

ISO 15489 (2017). *Information and documentation — Records management — Part 1: Concepts and principles*. International Organization for Standardization.

ISO 9000. (2015). *Quality management systems. Fundamentals and vocabulary (ISO 9000:2015)*. International Organization for Standardization.

ISO 9001. (2015). *Quality management systems. Requirements*. International Organization for Standardization.

PMI, Project Management Institute (2024) *Business Analysis for Practitioners: A Practice Guide*. Chicago Project Management Institute.

Shaw, K.A (2013). *Integrated Management of Processes and Information*. Business Expert Press, LLC.

Slack, Champers, and Johnston (2007). *Operations management*. Pearson Education Limited.

Wiggins B. (2012). *Effective Document and Data Management*. Routledge Taylor & Francis Group.