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# Recommendations for Improving the Complaint Management Process

of a Biotech Case Company

Helsinki Metropolia University of Applied Sciences

Master's Degree

**Industrial Management** 

30 April 2020



I am truly thankful to the case company for the opportunity to have worked on this project that produced valuable results for stakeholders. I would like to personally thank all the participants for their contribution to this project.

My thanks also go to my thesis advisor, Dr. James Collins, for his extremely helpful input and guidance. Many thanks to Sonja Holappa for steering our class through the thesis writing process. I am also grateful to the lecturers of the Department of Industrial Management, and to my fellow students in the class of 2020 for the great interactions throughout the degree programme.

My deepest thanks go to my family, without whose help I could not have been successful with this thesis.

Marian Agyiriwa Teye Espoo April 30, 2020



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Title	Recommendations for Improving the Complaint Manage- ment Process of a Biotech Case Company
Number of Pages Date	82 pages + 4 appendices 30 April 2020
Degree	Master of Engineering
Degree Programme	Industrial Management
Instructors	Dr. James Collins, Senior Lecturer

A well-defined complaint management process sits at the core of customer relationship management and should be recognized as fundamental to a customer-oriented corporate strategy. Complaint management has two goals - to ensure customer satisfaction, and to provide feedback information that can drive product quality improvements as well as information for new product development. However, many organizations have challenges in attaining a complaint management process that achieves both of these important goals. The Biotech case company would like to improve the customer complaint management process so that it is more efficient, while delivering the highest level of customer support. The objective of this study is to investigate the complaint management process of the case company.

The research study was conducted using applied design research methodology. Data was collected in a triangulated process from interviews, workshops and internal company documents. The research was conducted in four stages. First, the current state analysis of the complaint management process was performed and the weaknesses in the current process were determined. Next, a conceptual framework was develop using best practices from literature to address the identified weaknesses. Subsequently, the initial recommendations for improvement of the complaint management process was co-created with stakeholders.

The study produced an optimized framework outlining the entire business processes for a robust customer complaint management system at the case company. The recommendations for improving the complaint management process propose that customer-focused continual process improvement should be carried out in order to correct the gaps in the current processes. Additionally, the outcome proposes the integration of a knowledge management infrastructure into the complaint management process. The recommendations for improvement of the complaint management process was validated and approved by the management of the case company.

The outcome of this study is generally applicable to the case company, as well as to other organizations that wish to maximize the benefits from their complaint management process. Customer-oriented continuous process improvement should be implemented together with knowledge management in order to maximize the rewards of complaint management.

Keywords	Complaint management, knowledge management, contin-
	uous process improvement, customer-orientation



Table of content

Preface

Abstract

**List of Figures** 

List of Tables

Acronyms

1	Intr	oductio	n	1
	1.1	About	the Company	3
	1.2	Busin	ess Challenge	3
	1.3	Resea	arch Objective and Outcomes	4
	1.4	Thesi	s Outline	4
2	Mat	erials a	nd Methods	5
	2.1	Resea	arch Approach	5
	2.2	Resea	arch Design	7
	2.3	Data (	Collection and Analysis	9
3	Cur	rent Sta	ite Analysis	14
	3.1	Overv	iew of the Current State Analysis Stage	14
	3.2	Descr	iption of the Current Complaint Management Process	15
		3.2.1	Complaint Initiation	17
		3.2.2	Complaint Processing	21
		3.2.3	Response to Customer and Closing of the Complaint	31
	3.3	Data a Manag	nd Knowledge Management in the Current Complaint Jement Process	32
	3.4	Streng Proces	ths and Weaknesses of the Current Complaint Management	34
	3.5	Key F	indings from the Current State Analysis	38
4	Bes Kno	t Practio wledge	ces on Customer-Oriented Continual Process Improvement ar Management	าd 40
	4.1	Custo	mer-Oriented Continual Process Improvement	40
		4.1.1	Management Commitment and Leadership	44
		4.1.2	People Empowerment	44
		4.1.3	Process Optimization	45
		4.1.4	Performance Measurement	46
	4.2	Custo	mer Knowledge Management	47



	4.3	Integrating Customer-Oriented Continual Process Improvement and Knowledge Management	50
	4.4	Conceptual Framework of this Thesis	51
5	Buil Proc	ding the Recommendations for Improving the Complaint Management cess	55
	5.1	Overview of the Proposal Building Stage	55
	5.2	Stakeholder Input to the Initial Recommendations	56
	5.3	Recommendations to Improve the Complaint Management Process	60
	5.4	Recommendations to Improve the Customer Support Process	65
6	Vali	dation of the Recommendations	68
	6.1	Overview of the Validation Stage	68
	6.2	Stakeholder Input in the Validation Stage	69
	6.3	Finalization of the Recommendations Based on Validation Data	72
	6.4	Final Proposal	72
7	Con	clusions	73
	7.1	Executive Summary	73
	7.2	Managerial Implications	75
	7.3	Thesis Evaluation	76
		7.3.1 Validity and Reliability	76
		7.3.2 Logic and Relevance	77
	7.4	Closing Words	78
Re	feren	ces	79
Ар	pend	ix 1. Field Notes for Respondent 1 Interview	1
Ар	pend	ix 2: Results of Prioritization of Weaknesses (MoSCoW Analysis)	3
Ар	pend	ix 3: Proposal Building – Stakeholder Suggestions	4
Ap Pro	penc ocess	lix 4: Recommendations for Improvement of the Complaint Managemer s of the Case Company	nt 5



List of Figures

Figure 1. ACSI American Customer Satisfaction Index Model, adapted from Fornell, Johnson, Anderson, Cha, & Bryant, 1996	2
Figure 2. Main stages in carrying out design sciences research (Adapted from Kuechler, 2008)	7
Figure 3. Research design for this study	8
Figure 4. Process diagram of the current complaint management process	16
Figure 5. a. Process diagram of Return Goods sub-process in complaint management, b. 3 <sup>rd</sup> party products investigation	20
Figure 6. Important notifications for Complaint Management in the QM softwar	<sup>.</sup> е 22
Figure 7. Process diagram of complaint investigation sub-process in complair management by the Research and Development unit	nt 25
Figure 8. Process diagram of customer support activities for users of Product	3 27
Figure 9. Three routes linking customer complaints to company performance (adapted from Uusitalo 2008)	41
Figure 10. The Plan-Do-Check-Act (PDCA) cycle	42
Figure 11. Customer-Oriented Continual-Process-Improvement with Knowledg Management (CO-CPI-KM) conceptual framework	je- 52
Figure 12. Initial recommendations for improving the complaint management process	63
Figure 13. Details of initial recommended actions for improving the complaint management process	64
Figure 14. Recommendations for improving customer support process for use of Product 3	ers 66
Figure 15. Details of recommended actions for improving the customer support process for users of Product 3	rt 67



## List of Tables

Table 1. Comparison of case study, action research and design research           characteristics	5
Table 2. Details of interviews and workshops (Data collection round 1)	10
Table 3. Details of workshops (Data collection round 2)	11
Table 4. Details of meeting (Data collection round 3)	11
Table 5. Details of internal documents in Data 1	12
Table 6. Strengths of the current complaint management process	34
Table 7. Weaknesses of the current complaint management process	36
Table 8. Knowledge Management solutions	48
Table 9. Forms and templates	57
Table 10. Lack of official sub-processes for some stages of the process	57
Table 11. Standard Operating Procedures	58
Table 12. Trainings for stakeholders	59
Table 13. Analytics and Reporting	60
Table 14. Feedback and suggestions during validation stage	71



## Acronyms

AR	Applied research
B2B	Business-to-Business
B2C	Business-to-customer
BPMN	Business Process Model and Notation
BPR	Business Process Reengineering
САРА	Corrective and Preventive Actions
CAS	Customer Allegiance Score
СМР	Complaint Management Process
CO-CPI	Customer-Oriented Continual Process Improvement
CPI	Continuous or Continual Process Improvement
СЫ-КМ	Continual-Process-Improvement-with-Knowledge Management
CRM	Customer Relations Management
JTQC	Japanese Total Quality Control
KM	Knowledge Management
NC	Nonconformance
PDCA	Plan-Do-Check-Act process
QA	Quality Assurance
QM	Quality Management
QMS	Quality Management System
QN	Quality Notification number
R&D	Research and Development
TQM	Total Quality Management



#### 1 Introduction

In an era of global competition, manufacturing and service companies focus on providing quality products and services in order to attract and retain loyal and profitable customers. However, manufacturing and service companies are not able to provide products and services that meet every expectation and need of varied customers (Cambra-Fierro, Melero, & Sese, 2015). Customers therefore need a channel through which their needs and complaints can be handled and addressed. Customer satisfaction has become an important factor in today's business environment and companies invest in tracking customer satisfaction using Customer Relationship Management Systems (CRMs) and customer satisfaction surveys. Within customer relationship management, a well-defined Complaint Management Process (CMP) sits at the core and should be recognized as fundamental to a customer-oriented corporate strategy (Stauss & Seidel, 2004). When customer complaints are handled well, companies leave a good impression. Aggrieved customers will have a positive cognition and may in turn be converted to loyal customers. So properly handling customer complaints can make customers more inclined to consume companies' products and services (Karatepe, 2006).

Complaint Management Process is a very valuable customer interface for a company. Much research has gone into discovering what drives the lodging of a customer complaint, the emotions and responses of dissatisfied customers, and how complaint resolution impacts customer satisfaction and loyalty (Homburg & Fürst, 2005). It has been established that even though about 25% of customers are dissatisfied with their products, only 4% of customers lodge a formal complaint with the manufacturer (Cook, 2012) (Barlow & Möller, 2008). Therefore, it is important that organizations do not assume that low rates of customer complaints imply that customers are satisfied.

Research shows that although customer dissatisfaction is the main driver for complaints, complaint satisfaction is a significant driver of customer loyalty and is more powerful in some cases than the overall customer satisfaction accumulated over time (Homburg & Fürst, 2005). These dynamics between customer satisfaction, customer complaints and customer loyalty are relevant in both Business-tocustomer (B2C) and Business-to-Business (B2B) relationships (Haverila & Naumann, 2011). Good complaint management practices also have a positive im-



pact on repurchase intention of customers who lodge complaints. In some industries, if the customer complaint is handled properly, there is 95% repurchase intention by the customer compared to 50-70% for all complainants (Cook, 2012). However, if complaint management is mishandled, repurchase intention can drop significantly, leading to customer attrition. The dynamic relationships at play are depicted in the ACSI American Customer Satisfaction Index model shown in Figure 1 (Fornell, Johnson, Anderson, Cha, & Bryant, 1996).



Figure 1. ACSI American Customer Satisfaction Index Model, adapted from Fornell, Johnson, Anderson, Cha, & Bryant, 1996

Complaint management also has an important role in quality management within an organization, and is a requirement in ISO 9001:2015 which outlines the criteria for quality management systems. By analyzing customer complaints, an organization gains important data for continuous quality improvements because customer complaints may provide more information about areas for improvement than the information obtained from the Customer Allegiance Score (CAS) (Stauss & Seidel, 2004). According to Barlow (2008), organizations should see customer complaints as a gift and should ensure that the complaint management process makes the complaint journey of its customers as easy and satisfying as possible (Barlow & Möller, 2008). In summary, complaint management is an area of high potential reward and high risk for any organization regardless of whether they are engaged with B2B or B2C customers.

The Biotech case company has made customer satisfaction a key component of the company's growth strategy. In all its divisions, an effective complaint management process will strongly support the corporate strategy. This thesis investigates

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the complaint management process of the Biotech case company. The thesis outlines the internal phases of the complaint management process within the case company. The outcome of the thesis is a compilation of recommendations for improving the complaint management process.

## 1.1 About the Company

The case company is a manufacturer of biotech products. The case company is situated in Finland. Customer satisfaction is one of the key growth strategies of the company, and a key performance indicator (KPI) used to evaluate the performance of its divisions. Business-to-Business customers play an important role in the global supply chain of the case company. The addressable market for the case company's products is dominated by a few key competitors that make similar products and the company faces strong competition particularly in Europe, America, Australia and Asia. In Asia where there are increasing numbers of start-up companies, there are new entrants to the market that have the potential to capture niches of customers. In summary, customers within the case company's market segment have increasingly more options to acquire, from a growing number of competitors, products for their biotech needs.

## 1.2 Business Challenge

The products manufactured by the biotech case company are highly technical products that require specialized equipment as well as specialized expertise of the customer. Training of B2B customers is provided by the Field Application Specialists or Technical Sales Specialists, and they continue to support the customer throughout their use of the products. The current complaint management process for the case company is complex. When a B2B customer encounters a problem with a product or has a complaint, specialized and technical investigations are sometimes required in order to determine the root cause of the customer's problem and to provide solutions. Since the case company's products are usually a key component in the customer's own manufacturing process, rapid responses to customer questions or complaints are necessary in order to ensure that there is no negative impact on the customer's own production processes. The requirement for thorough but fast investigations is an inherent part of the complaint management process. Internally, the investigations are conducted by the Research and



Development unit and the Operations unit and they consume a significant portion of time and resources.

In order to maintain the high level of customer satisfaction with the case company's products, the current complaint management process must be improved. The business challenge for the case company is to improve the customer complaint management process so that it is more efficient in order to optimize resources, while delivering the customer support necessary to maintain and improve the customer satisfaction level.

## 1.3 Research Objective and Outcomes

The study was conducted by first reviewing the current state of complaint management process within the case company. Based on the findings, a conceptual framework for complaint management was developed from existing literature. Recommendations for improving the complaint management process were also developed within the conceptual framework. The proposed recommendations were validated by stakeholders and by management of the company.

The objective of this thesis is to provide recommendations on how to improve the current complaint management process.

With the aim of improving the efficiency of the internal process, the scope of the thesis is restricted only to the internal phases of the complaint management process (within the company). Therefore, customer feedback it is not covered in the scope of this thesis.

The outcome of the thesis is a compilation of recommendations for improving the complaint management process.

## 1.4 Thesis Outline

The thesis is divided into seven sections. Section 1 is the introduction which presents the business context, business challenge and thesis objective. Section 2 is the materials and methods section, which covers the research approach, research design, data collection and analysis. Section 3 reports the current state analysis of the case company's complaint management process including data obtained

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from stakeholder interviews, workshops and internal company documents. It also presents the key findings of strengths and weaknesses of the current complaint management process. Section 4 is a literature review of the best practices in complaint management with a focus on the strengths and weaknesses identified during the current state analysis of the case company's process. From this literature review, a conceptual framework for the complaint management process is presented. Section 5 describes the development of recommendations for improving the case company's complaint management process, including data collected from stakeholder workshops used in building the recommendations. Section 6 reports the validation of the recommendations by the case company's management. In Section 7, conclusions including next steps and recommendations for final refinement are discussed.

## 2 Materials and Methods

This section describes the research approach, research design, data collection and methods for data analysis employed in this study.

## 2.1 Research Approach

Two types of approaches may be employed in research; basic research or applied research. In basic research, often referred to as fundamental research, the goal of the research is to increase knowledge about a particular topic. Applied research has a goal to provide a solution to an existing problem. Applied research has been used extensively to provide practical solutions to problems in a large variety of contexts including society and organizations (Dresch A., 2015). Applied research typically involves bringing together stakeholders from different disciplines similarly to the complexity of real-life problems, which usually requires stakeholders from different backgrounds to work together (Pade-Khene, 2013). For this reason, applied research is a common type of research when investigating business organizations. Applied research, case study, action research, and design research and design research methodologies in applied research (Dresch A., 2015).

 Table 1. Comparison of case study, action research and design research characteristics (adapted from Dresch, 2015)



Characteristics	Case Study	Action Research	Design Science Research
Objectives that can be achieved	Assist in the understanding of the complex phenomena. Test or create theories Explore, Describe, Explain and Predict	Solve or explain problems of a system generating knowledge for both practice and theory Explore, Describe, Explain and Predict	Develop artifacts that allow satisfactory solutions to practical problems. Contribute to the building of theories (mid-range theories) Design and Prescribe
	Define conceptual Framework	Plan Action	Define the Problem
Main activities	Plan Cases	Collect Data	Suggest
planned for a	Conduct Pilots	Analyze data and Plan Actions	Develop
of research	Collect Data	Implement Actions	Evaluate
orrecouldri	Analyze Data	Evaluate Results	onclude
	Generate Reports	Monitor (Continuous)	Communicate
General Knowledge	On how things are or how they behave	On how things are or how they behave	On how things should be
Specificity of research results	Specific situation	Specific situation	Generalizable to a certain Class of Problems

A general method for carrying out design research has been described in Figure 2 (Kuechler, 2008). Problem awareness is the first stage, which requires the researcher to understand the problem and its context, and understand how the problem interacts with its context. In the second stage which is the suggestion stage, multiple possible ideas of solutions should be offered and tested. At this stage, the investigator should accept satisfactory solutions, and not only optimal solutions. In the developmental phase, the selected solution has to be developed. In the fourth stage, the solution is evaluated. In the conclusion phase, the entire research project needs to be finalized, synthesized and all stages should be harmonized. The final stage in design research is communication, which aims at reporting the findings of the investigation to increase information in the investigated field (Dresch A., 2015).





Figure 2. Main stages in carrying out design sciences research (Adapted from Kuechler, 2008)

For this thesis, an applied design research method was selected since this method provided a relevant and rigorous framework to achieve the objectives of the study. As an applied design research project, the current study has a goal of developing a satisfactory solution to a practical problem. Being an applied design research study, it also aims to contribute to building on current theories in complaint management, its research results are tangible results in the form of 'Recommendations', and finally, the study provides a general knowledge on how complaint management processes should be performed.

## 2.2 Research Design

The research design used for the study is depicted in Figure 3. The study was conducted in four distinct stages: current state analysis, literature review, development of recommendations and validation of recommendations, with three data collection stages.





Figure 3. Research design for this study

During the current state analysis, the aim was to develop a clear in-depth understanding of the current complaint management process. Relying on the collection and analysis of primary data from stakeholder interviews, internal company documents and a stakeholder workshop, the outcome of this stage was a documentation of the current complaint management practices employed in the case company and a summary of the strengths and weaknesses of the current process.

A literature review was performed based on the identified weaknesses from the current state analysis. The aim was to build a conceptual framework for the development of improvement recommendations. To build this framework, existing literature on complaint management, continuous process improvement, and knowledge management were reviewed. From the literature, best practices in complaint management which addressed the areas of weaknesses identified in the current state analysis were extracted. The outcome of the literature review was a conceptual framework for addressing the areas of weakness in the current complaint management process.

During the development of recommendations for the improvement of the complaint management process, the conceptual framework and results of the current state analysis were used as a foundation for proposing of suitable solutions. The outcome of this stage was the initial recommendations which was developed in a



co-creative process with stakeholders through feedback from stakeholder workshops (Data 2).

The recommendations were validated by management in the final stage of the thesis. The improvement ideas and feedback from management (Data 3) formed the basis for the final refinement of the recommendations. The outcome of the thesis is a documentation of the recommendations for improving the complaint management process of the case company.

## 2.3 Data Collection and Analysis

The study draws from a variety of data sources including face-to-face interviews, workshops, and internal company documents. Triangulation in data collection was observed by multiple rounds of data collection in which the results from the initial data collection stage was iterated in different stakeholder workshops, ensuring that the data was reliable. Data was collected in three different data collection rounds. Table 2 to Table 4 list the details of stakeholder interviews, workshops, and management interviews that are composed in all three data collection rounds. Eight people were interviewed, and 5 people participated in a stakeholder workshops in Data collection round 1. Seven people participated in the validation meetings in Data collection round 3.

In the first data collection round (Table 2, Data 1), data was collected in order to perform a current state analysis of the case company's complaint management process. All the data was analysed using thematic content analysis method. Data 1 included 8 interviews with relevant stakeholders, review of internal documents and a stakeholder workshop. Internal stakeholders interviewed including Technical Sales, Technical Support, Quality and Regulatory Affairs, and Research and Development units. Customers were not included since the scope of the thesis is on internal processes, and customer satisfaction with the complaint management process did not fall within the scope of this study. Interviews were conducted in a semi-structured manner, with open-ended interview questions as shown in summary of field notes for Respondent 1 presented in Appendix 1.



DATA 1:			
Respondent	Type of Data	Topic of Discussion	Documenta- tion
Respondent 1: Technical Support Specialist	Face-to-face interview	Detailed description of overall pro- cess, workflow, strengths, weak- nesses, requirements	Field notes, Audio record- ing
Respondent 2: Technical Sales Specialist	Face-to-face interview	Detailed description of role in the process, strengths, weaknesses, requirements	Field notes, Audio record- ing
Respondent 3: Quality Assurance Specialist	Face-to-face interview	Detailed description of role in the process, workflow, strengths, weaknesses, requirements	Field notes, Audio record- ing
Respondent 4: QARA Manager	Face-to-face interview	Description of Management expec- tations, Reporting, CAPAs, strengths, weaknesses, require- ments	Field notes, Audio record- ing
Respondent 5: R&D Supervisor	Face-to-face interview	Detailed description of role, work- flow, strengths, weaknesses, re- quirements	Field notes, Audio record- ing
Respondent 6: Lead Lab Techni- cian	Face-to-face interview	Detailed description of role, work- flow, strengths, weaknesses, re- quirements	Field notes, Audio record- ing
Respondent 7: Re- search Scientist	Face-to-face interview	Detailed description of role, work- flow, strengths, weaknesses, re- quirements	Field notes, Audio record- ing
Respondent 8: Lead Lab Techni- cian	Face-to-face interview	Detailed description of role, work- flow, strengths, weaknesses, re- quirements	Field notes, Audio record- ing
WORKSHOP 1:			
Respondents 1, 3, 6, 7, and 8	Workshop	Prioritization of weaknesses using MoSCoW Analysis	Field notes

Interview questions were focused towards understanding the data flow, workflow, requirements, the strengths and weaknesses of the current process. The interviews were recorded, and also documented using field notes taken by the interviewer. Appendix 2: Results of Prioritization of Weaknesses (MoSCoW Analysis) contains the results of MoSCoW Analysis in the stakeholder workshop performed as part of Data 1.

In the second data collection round (Table 3, Data 2), initial recommendations were developed in a co-creative process using feedback provided by relevant stakeholders in field notes as well as completed feedback forms. Seven people from Technical Support, Quality and Regulatory Affairs, and Research and Development units were involved in two workshops conducted for Data collection round



2.

DATA 2:			
WORKSHOP 2: Co-creation	n of Recommenda	tions	
Participants	Type of Data	<b>Topic of Discussion</b>	Documentation
Respondent 1: Technical Support Specialist			
Respondent 3: Quality Assurance Specialist	Workshop	Pasammandations	Field notes, feed-
Respondent 7: Research Scientist	workshop	Recommendations	back documents
Respondent 8: Lead Lab Technician			
WORKSHOP 3: Co-creation	n of Recommenda	tions	
Participants	Type of Data	<b>Topic of Discussion</b>	Documentation
Respondent 5: R&D su- pervisor			
Respondent 9: R&D Man- ager	Workshop	Recommendations	Field notes, feed- back documents
Respondent 10: Senior R&D Manager			

Table 3. Details of workshops (Data collection round 2)

In the third data collection round (Table 4, Data 3), the initial recommendations were presented to the management in order to validate the proposed solutions. Modifications were made to the initial recommendations based on management's feedback. From this, the recommendations for improving the complaint management process were finalized. All the data was analysed using thematic content analysis method.

Tuble 4. Details of meeting (Data concettor round of
--

DATA 3:					
MANAGEMENT MEETING: Validation of Recommendations					
Participants	Type of Data	Topic of Discussion	Documenta- tion		
Respondent 9: R&D Manager	Validation Meeting 1	Recommendations	Field notes		
Respondent 10: Senior R&D man- ager					
Respondent 5: R&D Supervisor					
Respondent 11: Product Manage- ment Specialist Respondent 12: Technical Support Leader	Validation Meeting 2	Recommendations	Field notes		





Respondent 13: Eu-		
ropean Technical		
Services Manager		

During the current state analysis, internal documents obtained from stakeholders were reviewed. Table 5 lists the internal documents reviewed as part of Data 1. Document number 1 to 3 were provided by the Quality Assurance Unit. Document number 4 to 11 were received from the Technical Support Unit, and document number 12 was obtained from the Research and Development unit.

Table 5. Details of inter	rnal documents in Data 1
---------------------------	--------------------------

DATA 1: Internal Documents					
	Internal Document	Description	No. of Pages		
1	'Asiakasvalitusten käsittelypros- essi'	Standard operating procedures for handling of customer complaints	6		
2	Handling of Nonconformity Cor- rective Action Preventive Action and Continuous Improvement	Standard operating procedures for handling of Nonconformity, Correc- tive Action Preventive Action and Continuous Improvement	29		
3	Customer complaint SOP	Standard operating procedure for complaint handling	16		
4	Complaints Quality Manual	Standard operating procedure for complaint handling	8		
5	General Technical Support job description	Tech support advisor role	1		
6	Weekly QN review minutes	Example meeting notes of Technical Support weekly complaints review	4		
7	Technical Support Report	Example of Technical Support monthly report	5		
8	Issue Goods Return Note	Example of a returned goods note	1		
9	Complaint Flow with annotations	High level process flow of complaint process	1		
10	Complaint survey	Example of customer complaint sur- vey results	10		
11	TS organogram_2018_outdated	Example of Technical Support organ- izational chart	1		
12	Product 3 Customer Complaint form	Complaint handling form for Product 3 products	5		

On the whole, a significant amount of data was collected particularly during the current state analysis in order to describe the current process used in complaint



management for the case company. The data was collected in a triangulated process from interviews, workshops and internal company documents which is described in the Section 3 below.



## 3 Current State Analysis

This section discusses the current state analysis of the complaint management process of the biotech case company. First, this section gives an overview of the steps used in conducting the current state analysis. Secondly, it presents a detailed description of the current complaint management process of the company. Finally, it discusses the findings including the strengths and weaknesses of the current process, and key findings from the current state analysis.

## 3.1 Overview of the Current State Analysis Stage

The current state analysis was performed in order to describe the current process used in complaint management of the case company. There were four stages in the current state analysis. In the first stage, a detailed process flow of the complaint management process was developed from eight face-to-face interviews with key stakeholders and review of twelve internal documents. The interviewees were from Technical Support, Quality and Regulatory Affairs, Technical Sales, and different product-related teams within the Research and Development unit. Internal documents were obtained from Technical Support, Quality and Regulatory Affairs, and Research and Development units. During the interview, interviewees were asked to (a) describe their roles in the complaint management process, (b) to give a detailed description of the work flow and data flow in their portion of the process, (c) to identify what is required in order to fulfil their function in the complaint management process effectively, and as well, to list what is missing (gaps), and (d) to identify the strengths and weaknesses of the process. From the descriptions of stakeholders' work flows and review of internal documents, a process flow diagram of the current complaint management process was subsequently developed using BPMN 2.0 nomenclature (Silver, 2011).

In the second stage, interview data was analyzed using thematic content analysis in order to summarize the strengths and weaknesses of the current complaint management process. The data and knowledge management tools and techniques currently used by stakeholders in the complaint management process were summarized from the interview data.

In the third stage, a stakeholder workshop was held to prioritize the weaknesses of the current processes according to their importance. There were five workshop

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participants from Technical Support, Quality Assurance and Research and Development units. MoSCoW Analysis method was used by participants during the workshop to independently prioritize the weaknesses identified from stage 2.

## 3.2 Description of the Current Complaint Management Process

The process flow diagrams of the current complaint management process and its sub-processes are presented in Figure 4. The data collected in the interviews showed that the complaint management process of the case company is complex. The current complaint management process involves many important stakeholders such as the Customer, Technical Sales unit, Technical Support unit, Quality Assurance and Regulatory Affairs unit, Research and Development unit, and thirdparty suppliers and vendors (Figure 4). Currently, there are two software used in the complaint management process – the CRM software, mostly used by Technical Support and QM software, which is used by Quality Assurance, Research and Development and Production units.





Figure 4. Process diagram of the current complaint management process



Among all internal stakeholders in the complaint management process, there is a clear understanding of the importance of customer complaints and the need to prioritize all activities related to complaint management. Interviewees knew that the procedures for receiving, managing, and responding to customers' complaints can be the pivoting point between customer satisfaction and dissatisfaction.

## 3.2.1 Complaint Initiation

## Customers:

When customers such as end-users of the products contact Technical Support unit, the complaint management process is initiated. Channel partners (for example distributors) may receive complaints from their end-users, and contact Technical Support unit on their behalf, to initiate the complaint process. Very often, customers contact their Technical Sales Specialist or Field Application Scientist for assistance in troubleshooting their problems before lodging a formal complaint with Technical Support unit.

Customers typically communicate with Technical Support unit only, and do not interact directly with any of the other internal stakeholders. As can be seen in the complaint management process diagram in Figure 4, after complaint initiation, customers are contacted by Technical Support unit to acknowledge receipt of the complaint, to request for more information, to request for faulty products to be returned for tests if needed, and to give the results of the complaint investigation. For customers who purchase the products through distributors, all these communications go through a relevant channel or distributor before reaching the customer. There are some exceptions in complaint initiation in which customers contact their Field Application Scientists who then directly contacts the Research and Development unit with the complaint description. In such cases, Field Application Scientists are typically encouraged to lodge the complaints through Technical Support unit. However, not all cases are lodged properly through the complaint management system.

The primary mode of communication with customers is through email. Phone calls are sometimes used. In some infrequent cases, complaint comments are logged



by customers through the case company's general inquiry website. These complaints are then forwarded to Technical Support unit who then initiate contact with the aggrieved customer.

## Field Application Scientist:

In the current complaint management process, Technical Sales Specialists and Field Application Scientists do not have any official role in the process as described in the current standard operating procedures (Figure 4). However, in the current state analysis, it was discovered that they are an important stakeholder in the current process by acting as agents of complaint stimulation. In situations where customers have experienced a problem with the product but were not planning to lodge an official complaint, they have often been encouraged by Technical Sales Specialists and Field Application Scientists. In some cases, after encouragement from the Technical Sales Specialist, the customer may lodge a complaint themselves with the Technical Support unit. In other cases, the customer will lodge the complaint with the Technical Sales Specialist or Field Application Scientist and provide the necessary information. In such cases, Technical Sales Specialists or Field Application Scientists lodge the complaint on behalf of the customer. However, sometimes Technical Sales Specialists may have challenges obtaining the additional complaint information needed from the customer once a complaint is lodged. Additionally, there are customer complaints that are received directly to Research and Development unit through the Field Application Scientists which are investigated before the complaint is officially opened in the Technical Support's Customer Relations Management System (CRM system).

From the interview conducted, it was apparent that Technical Sales unit is a very strong advocate on behalf of customers and brings a strong 'Voice-of-customer' into the current complaint management process. It is important to note that some Technical Sales Specialists sometimes try to solve customer complaints directly. If a Technical Sales Specialist instantly assists a customer with a complaint, the complaint is not necessarily lodged into the complaint management system.

Technical Support:



In the current complaint management process, Technical Support unit is the most important internal stakeholder that the customer interacts with during the complaint management process (Figure 4). Technical Support unit maintains the communication with the dissatisfied customer throughout the complaint process. Technical Support unit also has the responsibility of opening the complaint in the CRM system and making sure that all complaint information is obtained from the customer and lodged. There are two important stages during the complaint initiation process. The complaint must first be put to 'CREATED' status when the complaint is created in the CRM software, and then it must progress to the 'ON TEST' stage at which the complaint is sent to the Quality Assurance unit for further investigation. In the complaint initiation stage of the current complaint management process, the transition from 'CREATED' to 'ON TEST' is one of the most critical but challenging steps. As stated in the standard operating procedures for complaint management of the case company, all complaint information must be gathered before the complaint is put 'ON TEST'. In practice, this means that all required information needed for the complaint investigation should have been provided by the customer, and if needed, product returns for the investigation must be already received by the investigation owner. Additionally, if needed, customer samples must also have been received prior to progressing to 'ON TEST' for further investigative tests to proceed.

The main challenge for Technical Support unit at this stage is understanding what information is needed for different types of complaints, and knowing when product returns or customer samples are required for the investigation. In the current process, it sometimes happens that an investigation is put 'ON TEST' but is later found by the investigation owner to have insufficient information. Technical Support unit also has some missing gaps in the complaint management process compared to the process used in other branches of the company. The gaps in the complaint initiation stage are (1) 'Return goods process' for the case company and (2) a process to 'receive return goods': thus a process for the investigation owner to notify the CRM system when returned goods or customer samples have been received (Figure 5 a).



Currently, for each complaint, Technical Support unit uses emails to inquire and ascertain the individual in the Research and Development unit, who returned products should be sent to. Technical Support unit also has to inquire again by email if the returned goods have been received.



Figure 5. a. Process diagram of Return Goods sub-process in complaint management, b. 3<sup>rd</sup> party products investigation



#### 3.2.2 Complaint Processing

#### Quality Assurance and Regulatory Affairs:

Quality Assurance unit is responsible for ensuring that all quality and regulatory issues related to products are properly documented and tracked (Figure 4). This includes oversight of all customer complaints, non-conformances and Corrective and Preventive Actions (CAPA). During the complaint processing stage, the complaint is handled purely with the QM software of the case company. Since Technical Support unit raises the complaint in the CRM software, the information in the CRM system must be transferred to the QM software by Quality Assurance unit. The Quality Assurance unit has a target to transfer the complaint from the CRM software to the QM software within the same day it receives notification from Technical Support unit of a customer complaint. After this stage, the complaint is assigned to an investigation owner. Quality Assurance unit ensures that evaluation of impact and risk assessment, reportability, and correct recording of the complaint details in the QM software is performed and properly documented. Additionally, the Quality Assurance unit keeps track of all the open customer complaints to ensure that they are handled within the allocated time. The Quality Assurance unit also reviews the progress of complaint investigations with the complaint owners during a weekly Quality Notification review meeting.

Some of the main challenges that the Quality Assurance unit faces during complaint processing include insufficient information in the complaint, excessive notifications from the QM software which make the notification system not effective, and challenges with assignment of the complaint investigation owner. In about 20% of complaints, Quality Assurance unit could be notified by the investigation owner that more information is needed from the customer, and this affects the 10day time frame available for complaint investigation. Quality Assurance unit tracks the stages of all open complaints, and gets automatic notifications of every activity by investigation owners in the QM software. The amount of notifications from QM software is currently rather excessive. The only notifications that are needed by Quality Assurance unit from investigation owners' activities are notification when the "Immediate Corrections" and "Evaluation – Impact/Risk Assessment" sections are completed and when the investigation report is ready (Figure 6).



From the complaint investigation outcome, a decision is made by Quality Assurance unit whether confirmed product defects require raising of a CAPA or if a particular problem has been reported many times by customers and needs to be put on 'trending' status.





## Research and Development:

As presented in Figure 4, the Research and Development unit plays an important role in the complaint management process. At present, there are three products manufactured by the case company whose customer complaints are investigated by the Research and Development unit. These have been classified as Products 1 to 3 in this thesis. The current state analysis showed that in the 'complaint investigation' process, as shown in Figure 7, the different product teams within the Research and Development unit have independent processes for their complaint investigations.

## Product 1:

As shown in Figure 7 below, one of the first steps in complaint processing performed by the investigation owner is verifying that enough information has been recorded in the complaint record for the investigation to be performed. Although there is a complaint form in place to ensure that all the needed information is collected, the complaint form is not always used for collecting the information from customers. However, when the complaint form is used, customers very often do



not provide all the information requested. Additionally, the minimal necessary information that must be completed on the form for the complaint to be put 'ON TEST' is unclear for Technical Support unit. Not having enough information necessary to conduct a thorough investigation can slow down the process since the time available for completing the investigation gets used up by attempts to contact the customer again to request for additional information.

As part of the work duties, complaint owners give high priority to customer complaint investigations. They also have a tight deadline of 10 days which causes the sense of urgency with complaint investigations. During interviews, interviewees mentioned that the time frame available for investigations was a major challenge. They were unable to investigate as thoroughly as they would like to due to the limited time frame.

Furthermore, some customers were reluctant to ship their samples from intemational countries and that also hampered the ability to perform thorough investigations in some situations. There are no dedicated personnel in the Research and Development unit for handling customer complaints. Customer complaints are received at any time, without prior notification, and complaint investigations still need planning of tests, sometimes purchasing of supplies, and execution to be performed by the same Research and Development team. The interviewees reported that handling urgent customer complaints can sometimes be disruptive and hamper ongoing Research and Development tasks. Some interviewees suggested that a mechanism for extending the investigation time will help them ensure that all customer complaints are handled thoroughly. With regard to time spent on customer support activities for Product 1, the Research and Development unit still performs some customer support activities, such as answering emails from Technical Support unit regarding customer questions, software or instructions for use (IFU).

## Product 2:

As shown in Figure 7, on arrival of customer complaints, the investigation owner of Product 2 performs the preliminary investigation using the complaint data sent by the customer. From the available data, the problem is categorized according to the root cause. After the preliminary investigation, the investigator concludes whether the complaint is 'confirmed' or 'unconfirmed', and determines whether



the product needs replacement. The investigator requests the faulty product if further investigation is needed and investigation continues once the faulty product is received. During the investigation stage, the investigation owner engages with the relevant stakeholders, including software developers and instrument vendors, to find a solution to the problem. Additionally, the investigation owner has many email communications with customers in order to be able to successfully solve their problem.





Figure 7. Process diagram of complaint investigation sub-processin complaint management by the Research and Development unit

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#### Writing the investigation report:

All interviewees expressed satisfaction with the current status of the investigation reports (Figure 7) that are sent from the investigation owner to Technical Support unit. There is a good understanding within the Research and Development unit about what kind of information can be shared with customers in relation to Intellectual Property. None of those interviewed found it challenging to write the investigation reports. However, it was expressed that it would be helpful to have a general Standard Operating Procedure for writing complaint investigation reports. There was also a general wish that the standard operating procedure should also provide guidelines on what information is protected by Intellectual Property rights.

#### **Customer Support Activities for Product 3:**

The process used for investigations of customer complaints for Product 3 is quite different from the process described for Products 1 and 2, and is also shown in Figure 7. Customer support activities for Product 3 are further elaborated in the process diagram in Figure 8.

Product 3 involves many different instruments, software and product supplies from different manufacturing sites globally. Some of these components are manufactured by external stakeholders which are indicated as External stakeholder #1 and External stakeholder #2 in Figure 8. The product offering is a relatively new and rapidly growing product offering for the case company. During the current state analysis, it was found that since Product 3 was launched, there has been only one customer complaint that has been processed through the official complaint management process (Figure 7). However, a large volume of customer-support activities is managed by a product support team that includes the Product Manager, Field Application Scientists, and Research and Development scientists. In these customer-support activities, customers of Product 3 are looking for solutions to help them solve bottlenecks and optimize the product to their particular needs. Customers of Product 3 are not 'complaining' of the performance of the product or product defects. Figure 8 depicts the process diagram for customer support activities of Product 3.





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Figure 8. Process diagram of customer support activities for users of Product/3

27

## **Customer Support Initiation for Product 3:**

As shown in Figure 8, customer inquiries on Product 3 come through the Field Application Scientists directly to Research and Development unit through many channels including email, phone calls and even Whatsapp messages in some cases. The Product Manager may also email the Research and Development unit for solutions to customer challenges. Customer inquiries are categorized into three groups when received, which are (a) customer samples, (b) software or (c) instrument or equipment.

## **Customer Support Investigations for Product 3:**

The process diagram in Figure 8 clearly shows the different investigation paths that are taken for the different categories of customer inquiries, and the relevant stakeholders involved in each category. Components of Product 3 including software and instruments that are manufactured by two different external stakeholders are indicated as External stakeholder #1 and External stakeholder #2.

*Customer samples*: An estimated 70% of customer inquiries are related to compatibility issues with customer samples. Customer inquiries involving the case company's components in Product 3 are sent to the relevant Technical Support unit for resolution. Inquiries related to components manufactured by External stakeholder #1 are sent to their respective technical support teams. Customer inquiries related to products from External stakeholder #2 are forwarded to the Product Manager who then forwards them to the relevant external stakeholder unit.

*Software:* Software inquiries make up an estimated 25% of customer inquiries. Most software inquiries are related to External stakeholder #2 software. These inquiries are forwarded to the Product Manager for Product 3, who communicates with the relevant external stakeholder unit in order to find a solution for the customer. Occasionally there are inquiries about External stakeholder #1 software, and these are resolved either by the Research and Development team alone, or by the external stakeholder #1 software team.

*Instrument and Equipment:* Finally, instrument and equipment inquiries account for an estimated 5% of customer contacts and these inquiries are usually about External stakeholder #2 instruments. These inquiries are resolved either by the


Research and Development team alone, or by the External stakeholder #2 unit and Field Application Scientists.

Involvement of Field Application Scientists: The Product 3 Research and Development team actively involves the Field Application Scientists when providing responses to customers (Figure 8). The involvement of the Field Application Scientists in customer inquiries about Product 3 is considered a strength by the Research and Development team. This is because it is considered important that the Field Application Scientists supporting the products gettrained to be able to solve the problems themselves and also it is considered important that they know what the Research and Development team has advised the customer to do.

#### Challenges of Customer Support:

The main challenge that Research and Development unit has in the investigation stage is a lack of established processes for interaction or communication with the external stakeholders (Figure 8, coloured in red). Currently, there are no standard operating procedures related to the customer support activities for users of Product 3. Additionally, the responsible persons in external stakeholder units for instrument and software-related customer inquiries have not been specified. Significantly, Technical Support unit is currently uninvolved and unaware of the handling of customer inquiries from users of Product 3.

This situation strongly impacts the time frame within which the different categories of customer inquiries from users of Product 3 can be handled. In about an estimated 70% of customer inquiries, the Research and Development team is able to answer the customer inquiry without needing to contact other stakeholders. In such cases, the customer receives a response within 2 days and usually enough information is available to provide a complete solution to the customer. However, the time frame is generally unpredictable for responses to inquiries involving products manufactured by external stakeholders. Additionally, there is no guarantee of the amount of information that will be received from these stakeholders or if enough information will be received in order to provide the customer with a complete solution. In these cases, in some instances, it is possible to end up without a solution.



External stakeholder #1: Currently, external stakeholder #1-related customer inquiries (Figure 8) are resolved adequately because:

(a) the Research and Development team currently has over 7 years of experience with external stakeholder #1 products and is able to resolve everyday problems that customers may face without consulting the external stakeholder #1 team

(b) Research and Development team has many personal contacts within the external stakeholder #1 unit who know Product 3 applications well

(c) the external stakeholder #1 Field Application Scientist assists with external stakeholder #1 product-related questions.

Due to these open communication channels, challenging external stakeholder #1 customer inquiries are sent through personal emails to such contacts who then assist in finding solutions for the customer.

External stakeholder #2: For these customer inquiries, the Research and Development team have no personal contacts with External stakeholder #2 unit (Figure 8). All communication with External stakeholder #2 unit goes through the Product Manager for Product 3. The Product Manager is a very good support to the Research and Development team and is very effective at searching for the relevant stakeholder contacts to find solutions. However, the Research and Development team does not have enough information external stakeholder #2 products in order to independently support customers.



#### 3.2.3 Response to Customer and Closing of the Complaint

#### **Quality Assurance:**

In the current complaint management process (Figure 4), Quality Assurance unit gets notified from the QM software and also from investigation owners after the complaint investigation results or investigation report has been uploaded to the QM software. Quality Assurance unit reviews the entire complaint and investigation report. In some cases where the complaint owner does not attach an investigation report, the Quality Assurance unit drafts a report from the information in the complaint investigation results. Additionally, the Quality Assurance unit checks that the complaint investigation report clearly indicates if the complaint was 'CONFIRMED' or 'UNCONFIRMED'. The Quality Assurance unit then sends the investigation report to the Technical Support unit by email.

#### Technical Support:

Once the investigation report has been uploaded to the CRM software, the Technical Support unit has to review the report (Figure 4). The complaint status is subsequently indicated as 'CONFIRMED' or 'UNCONFIRMED' in the CRM system. Based on the investigation findings, Technical Support unit writes a customerdirected report using the appropriate template for end-users or for distributers. This letter must be uploaded to the CRM software. The customer letter is not needed in every complaint since the customer is asked on first contact if a written letter is required or not. In the CRM software, Technical Support unit can put a notification to Customer Services if a replacement product should be sent to the customer. The customer complaint is then closed in the CRM software.

#### Response to customer inquiries from users of Product 3:

As mentioned previously, customer inquiries from Product 3, currently do not go through Technical Support unit, and therefore Technical Support unit does not handle the response to customer (Figure 8). The response to the customer is sent to the Field Application Scientists who helps the customers to implement the suggested solution. The solution offered varies depending on the customer case. For example, some customers may receive training documents developed by Research and Development unit to address their specific needs, and in some cases, training webinars are run with customers.



#### Follow-up and Feedback:

Currently, there is no follow up of the customer after the complaint report is sent to the customer. Interviewees expressed the opinion that they considered the absence of follow up to be a weakness. Interviewees suggested that at least in the customer letter, it could be suggested to the customer that a phone call, follow-up visit or training could be offered if needed. The Field Application Scientist is not involved in the response to customer, unless they lodged the complaint on behalf of the customer. Also, Research and Development unit does not obtain any feedback on whether the solutions suggested to the customer worked, or if the customer even implemented the suggested solution. As part of the internal documents reviewed during the current state analysis, it was noted that a customer complaint survey was performed by the European Technical Support unit in 2018. However, such follow-up surveys are not common or a standard practice in the current complaint management process.

3.3 Data and Knowledge Management in the Current Complaint Management Process

Data management refers to how data is collected, organized and stored in order for it to be used as a resource. During interviews, stakeholders were asked about how data is managed in their portions of the complaint management process.

Currently, there are two software used in the complaint management process – the CRM software and QM software. Although interviewees all expressed overall satisfaction with the software in use, specific challenges encountered with the QM software were raised. Data storage was reported as the biggest challenge in data management – there are no guidelines on where to archive the data, email communications with suppliers or customers, generated during complaint investigations. The second challenge is with searching and retrieving complaint history in the QM software. Because the software is challenging to use and stakeholders have not been adequately trained, interviewees have difficulty in searching the QM software complaint archives to determine if similar complaints have been received before.



Customer-support activities for Product 3 also have significant challenges with data management. Archived customer inquiries for Product 3 is particularly helpful for the Research and Development team because the old solutions that have been archived can be reviewed in order to solve new customer inquiries. An email account was created that was supposed to be dedicated to customer inquiries for Product 3. The idea was that this email account would archive all the information exchanged between all the stakeholders involved in the complaint investigation. Technical Support unit has access to this email account as well. However, currently the Field Application Scientists rarely contact the Research and Development team through this email account. Instead, they still use personal email accounts of the Research and Development team members or phone call to contact the team with customer inquiries. This has made archiving and knowledge management challenging for the Research and Development team.

Knowledge management has been described as "the process of capturing, distributing, and effectively using knowledge." (Davenport, 1994). In the context of this thesis, knowledge management will focus on the capturing the organizational knowledge around customer complaints and knowledge transfer. During interviewing of stakeholders, it became apparent that there is a significant gap in knowledge management for the supporting customers of Product 3. Currently, the customer support activities for Product 3 products are heavily dependent on the current individuals' knowledge. This poses a high risk to the complaint management process if any person leaves the company.

#### **Analytics and Reporting**

All monthly, quarterly and annual reporting of product quality related issues to management are performed by Quality Assurance unit based on the customer complaints data, and NCs and CAPAs in the QM software. In interviews with the Quality Assurance Specialist and the Quality Assurance and Regulatory Affairs Manager, all of them stated that the current reporting is adequate and complete for Management's needs. However, attention was drawn to the fact that the reporting and analytics is currently not easy to do on the QM software. Although training is available on how to optimally use the QM software, the training documents specifically for reporting and analytics are not currently very detailed. Additionally, it was suggested that there are available analytical tools which can be used as an accessory to aid in reporting from the QM software. However, special



access would need to be granted in order to use these analytics tools, and training will be needed.

For customer support activities for users of Product 3, which are currently not captured in QM software, there is currently no requirement for reporting. This means that currently there is no way to know the volume of customer inquiries, the time frame in which solutions are offered to the customer, or customer satisfaction with the customer inquiry resolutions.

3.4 Strengths and Weaknesses of the Current Complaint Management Process

# Strengths:

From the interviews with stakeholders, many strengths were shared by interviewees which demonstrated confidence in the current process. The data from the interviews was analyzed using thematic content analysis in order to obtain a list of strengths of the current complaint management process (Table 6). Since most of the listed strengths relate to the overall process, the strengths have not been categorized into the different phases of the complaint management process.

Table 6. Strengths of the current complaint management process

STRENGTHS OF THE CURRENT PROCESS				
1. Complaint form and Complaint Investigation Report template				
2. Good communication between stakeholders				
3. High quality of Complaint Investigation Reports				
4. Good process overall				
5. Good Software				
6. On-time solutions to customer				
7. Existing standard operating procedures (SOPs) are good				
8. Field Application Scientists involvement is good				
9. Strong customer partnership				
10. Strong technical knowledge				

The statements below were gathered from interviewees' comments on the strengths of the current process.

Complaint form and Complaint Investigation Report template:



"The fact that there is a complaint form is good since it gives tech support direction to get information needed from customer." – Tech support specialist

Good communication between stakeholders:

"QA and Tech support are easy to reach. There are quick responses from QA and Tech support to questions" – R&D investigation owner

High quality of Complaint Investigation Reports:

"Complaint investigation reports have been clear enough that tech support has usually had no questions" – Quality Assurance specialist

Good process overall:

"Overall customer complaint process works well." – Tech support specialist

**Good Software:** 

"CRM software captures every information related to the complaint, the customer complaint process in the CRM system works very well" – Tech support specialist

"QM software is good in tracking the complaint" – R&D investigation owner

On-time solutions to customer:

"Customer complaints are solved in a timely manner" – R&D investigation owner

"70% of the time, the R&D investigator is able to find a solution quickly and can respond to the customer within 2 days" – Product 3 customer support owner



#### Weaknesses:

Many weaknesses were shared by interviewees which demonstrated that there are areas of improvement in the current process. The data from the interviews was analyzed using thematic content analysis in order to obtain a list of weaknesses of the current complaint management process. Afterwards, a stakeholder workshop was organized in order to prioritize the listed weaknesses according to their importance. In the workshop, MoSCoW analysis was used by participants in order to prioritize the weaknesses and achieve a unified understanding on the importance of each of the weaknesses to stakeholders of the complaint mana gement process. In Table 7, the weaknesses have been categorized into the different stages of the complaint management process.

PROCESS PHASE	WEAKNESSES	PRIORITIZATION*
	Inadequate collection of complaint information	Must have
	Absence of official processes	Must have
Complaint ini-	Lack of training of stakeholders	Must have
tiation	Complaint form: Lack of version control of forms/templates	Could have
	Information not easy to find (not centralized)	Won't have
	Lack of Tech Support familiarity with products	Must have
	Lack of Standard Operating Procedures (SOPs)	Must have
	Absence of official processes	Must have
	Inadequate time	Must have
	Too many or inadequate notifications	Should have
Complaint	Lack of searchable complaint history records	Should have
processing	Inadequate Resources	Should have
1	Heavily dependent on individual's knowledge	Won't have
	Analytics and Reporting unsupported by soft- ware	Could have
	Undocumented complaint management activi- ties	Could have
	Complaint Investigation Report form: Lack of version control of forms/templates	Could have
Response to	Lack of Standard Operating Procedures (SOPs)	Must have
customer	Lack of customer follow up or feedback	Should have
	Lack of Field Application Scientist role	Should have

Table 7. Weaknesses of the current complaint management process

\*MoSCoW prioritization definitions: Must Have – must be included in the final solution for the solution to be considered a success. Should have – a high priority item that should be included in the solution if it is possible. Could have – is considered desirable, a nice-to-have, but not necessary.



Won't have – stakeholders have agreed that it will not be implemented at this time, as it provides little value.

From the current state analysis, the top five weaknesses are (1) Inadequate collection of complaint information, (2) Absence of official processes, (3) Lack of Standard Operating Procedures, (4) Inadequate time, and (5) Lack of training of stakeholders.

The statements below were gathered from interviewees' comments on the weaknesses of the current process.

Inadequate collection of complaint information:

"Tech support does not know what is required information in the complaint form, so sometimes a complaint may go 'on test' in the CRM software with an incomplete form" – Technical Support Specialist

"Investigators are not always able to test as thoroughly as they want to for the complaint. Sometimes, the customer is unwilling to ship samples from country to country." – R&D investigation owner

Absence of official processes:

"The case company does not currently have a process in place for product returns" – Technical Support Specialist

"Product 3 support email account is not being used by FAS's or customers, so enquiries have come into personal email accounts" – R&D investigation owner

Lack of Standard Operating Procedures:

"A clear SOP is needed for reporting of complaint investigations" – R&D investigation owner



Inadequate time:

"The due date of 10 days for opening the complaint and closing is too short, especially if one has many complaints at the same time. Extension of the time is sometimes needed" – R&D investigation owner

# Lack of training:

"Training is needed to improve FAS and Tech Support ability to answer the questions." – R&D investigation owner

"Tech support lacks adequate training on the products" – Technical Support Specialist

*"Refresher training is needed for investigators to do the impact assessment well" – Quality Assurance and Regulatory Affairs (QARA) manager* 

#### Impact of complaint management findings on product design:

Many examples of complaint investigation that led to product design changes were discovered during the current state analysis. This demonstrates that there is a strong drive to improve the products in order to provide customers with the best user experience. For example, for Product 2, a software bug that was investigated by the investigation owner led to a change in the software. For Product 1, product material properties have been changed in response to customer complaints. However, during interviews, many investigation owners expressed their frustration with the fact that some important changes could take years to be implemented due to lack of adequate resources.

# 3.5 Key Findings from the Current State Analysis

There are weaknesses in the current complaint management process which could be classified into two areas: (a) Process gaps and (b) Customer knowledge management. Process gaps include collection of complaint information from customers, missing sub-processes, missing standard operating procedures, processes



related to time for investigations, and training. Additionally, analytics and reporting processes are not adequately supported by the available software. For customer support activities for users of Product 3, the process gaps were lack of official processes or standard operating procedures, and lack of Technical Support unit's involvement. Customer knowledge management has been identified as a gap in the current complaint management process. The customer support activities for users of Product 3 are particularly vulnerable due to the limited availability knowledge management in the current process.

In the next section, existing literature for best practices for customer-oriented continual process improvements to resolve process gaps and best practices for implementing customer knowledge management were investigated in order to define a conceptual framework for developing the recommendations for improvement.



# 4 Best Practices on Customer-Oriented Continual Process Improvement and Knowledge Management

This section focuses on best practices in existing literature with a focus on customer-oriented continual process improvement and best practices for implementing customer knowledge management into organizations. Based on the findings from literature, a Continual-Process-Improvement-with-Knowledge Management (CPI-KM) conceptual framework was developed.

# 4.1 Customer-Oriented Continual Process Improvement

Customer orientation is the attitude and practice in customer-relations of an organization with the intention of ensuring customer satisfaction, customer retention, and product development in alignment with customer needs and values (Selden & MacMillan, 2006). This is also sometimes referred to as 'customer-centricity' or 'customer-focus'. Customer orientation has become essential to the survival and growth of organizations in current business environments. Unfortunately, most continuous process improvements in organizations have tended to focus predominantly on improving the efficiency of processes, and less on customer-orientation of processes (Uusitalo, Hakala, & Kautonen, 2008). Customeroriented continuous process improvement. In the context of Lean quality management, Kapanowski (2016) proposes that although the overall Lean process focuses on operational efficiency, the Lean strategy should drive the long-term goals of the organization, focusing on the customer and on integrating customer demands throughout the fabric of the organizations.

> "Lean is about involving everyone within the organization in continuous improvement efforts by thinking every day about how to make the process better, cheaper, easier, faster, and safer for the customer."-(Kapanowski, 2016)

Uusitalo et al. (2008) has the perspective that customer complaints should provide the seeds for customer-oriented continuous process improvements. The goal in complaint management should not be only towards having a satisfied customer, but instead the greater goal should be to utilize the complaint information for the



improvement of products and processes within the organization (Uusitalo, Hakala, & Kautonen, 2008). For complaint information to be utilized in improving organizational processes and operations, Uusitalo et al., 2008 proposed a model in which three intertwined routes drive the use of complaint information into continuous process improvement in the organization: the customer-orientation route, the engineering route (financial), and the human resource route (Figure 9).





It has been demonstrated that a good customer complaint management process is financially rewarding to the organization because it has a positive impact on customer satisfaction, customer retention, process improvement, employee attitude and retention, and financial profitability (Johnston & Mehra, 2002). Johnston et al. (2002) and Uusitalo et al. (2008) both recommend that customer-oriented process improvements should focus on processes that can achieve savings, increase profitability, and also ensure customer satisfaction goals are met. In summary, customer-oriented continual process improvement has a goal of 'delighting' customers and improving profitability by continuous improvement of the organization's processes (Mendelssohn, 2015; Uusitalo, Hakala, & Kautonen, 2008; Johnston & Mehra, 2002).

Continuous or Continual Process Improvement (CPI) is a strategized, methodical and systematic approach to improve processes within an organization. The major



guality management systems such as Japanese Total Quality Control (JTQC). Total Quality Management (TQM), Deming's system of profound knowledge, Business Process Reengineering (BPR), Lean Thinking and Six Sigma, all contain elements of continuous process improvement (Chiarini, 2011). Continuous Process Improvement is required in order for organizations to meet quality regulations such as ISO 9001 international standard for a quality management system (QMS). Therefore, CPI in Total Quality Management has been intensively researched and implemented in a variety of industries worldwide, and the use of Kaizen continuous improvement programs is very common (Liker, 2004; Kapanowski, 2016; Bond, 1999). The difference between 'continual' versus 'continuous' process improvement has been extensively debated. Whereas 'continual' process improvement denotes frequent and intermittent process improvement cycles with possible time gaps, 'continuous' process improvement implies uninterrupted cycles of improvement. Regardless of the use of the term 'continuous' or 'continual', both terms refer to the improvement process which is based on Deming's Plan-Do-Check-Act (PDCA) cycle as shown in Figure 10 (Chiarini, 2011).



Figure 10. The Plan-Do-Check-Act (PDCA) cycle

The PDCA cycle (Deming's cycle) is either at the core of the established quality management systems such as Total Quality Management (TQM), or a model for cycles in some quality management systems such as Six Sigma and Lean. The main stages of continual process improvement cycles are Plan stage, Do stage, Check stage and Act stage. In the Plan stages, objectives are defined, strategies are developed, and resources for change are evaluated. The Do stage is the implementation stage, which includes all that is involved in making the changes to the



process, including a focus on customer needs, as well as employee training and education. The Check stage is the stage for measuring the success of the process improvement activities to make sure that it has achieved its objectives. The Act stage is the stage for harnessing lessons learned, for re-evaluating the process, and for preparing to start the improvement cycle again (Chiarini, 2011).

The critical success factors necessary for continuous process improvement projects have been investigated. Aleu et al. (2015) compiles a comprehensive list of 53 critical success factors for continuous improvement projects which includes factors such as Structured methodology, Tool appropriateness, Stakeholder representation, Data availability, Target area commitment to change, General management support. Nine critical success factors are identified for success in CPI projects by Formento et al. (2013), and these are Formalization & Structure, Continuity or Duration, Deployment or Scope of Program, Training, Management Commitment, Program Coordination, Methodology & Tools, Performance Measurement, Communication of Results, and Recognition & Incentives. From a practical example in an case organization, factors such as selection of the CPI project, organization of a CPI team, education of the team about the different CPI tools, documentation of processes, setting of improvement targets and performance indicators, testing of the corrective actions, implementation of corrective actions, monitoring, reviewing, and reporting of results, are found to be important to the success of continuous process improvements (Ruhl & Yang, 1995). Chiarini et al. (2011) performs a comparison of the critical implementation factors from six important management systems which are the Japanese Total Quality Control, Total Quality Management, Deming's system of profound knowledge, Business Process Reengineering, Lean Thinking and Six Sigma. In this work, nine common factors are identified to be critical including: results and benefits, management style, deployment of the system, employee management, deployment and participation, Voice of the customer, tools techniques and IT, optimization of the system, dayby-day check and control of the results and review of the system. Gopesh et al. (2009) proposes a continuous improvement infrastructure framework which highlights the key decision areas as purpose, process and people (Gopesh, Ward, Tatikonda, & Schilling, 2009).

Extracting best practices in continual/continuous process improvement practices, four key critical success factors emerge in the literature reviewed: (a) management



commitment, (b) empowerment of people, (c) optimization of the process, and (d) measurement of performance. Details of these best practices are expanded in the following sections.

# 4.1.1 Management Commitment and Leadership

Management commitment to the customer-oriented continual process improvement is the foundation for success (Johnston & Mehra, 2002). It has been found in different types of business process improvement projects that top management commitment to the process of improvement is necessary to maintain the momentum and the focus (Change, Levy, & Powell, 2006). A useful model of leadership and management commitment in continual process improvement can be derived from the Lean 'Leadership People Process Outcome' (LPPO) model developed by Dibia et al. (2013). In the LPPO model, the leadership's commitment and vision to the Lean continuous improvement process is the main driver for empowering the people to optimize performance (Dibia, Dhakal, & Onuh, 2014). Ultimately, good leadership from management is the driving force for success of continual process improvements.

In summary, from best practices in management commitment and leadership described in literature, at each stage of the implementation process, it is recommended that management should: (a) Demonstrate long-term commitment and vision to the continuous improvement process (McKeown & Philip, 2003), (b) Engage and stimulate employees' engagement (Gopesh, Ward, Tatikonda, & Schilling, 2009), and (c) Maintain good top-down communication throughout the implementation process (Change, Levy, & Powell, 2006).

# 4.1.2 People Empowerment

Empowering employees in customer-oriented continual process improvement means adequately resourcing the relevant stakeholders so that they can be committed, innovative, and enthusiastic in the implementation of process changes. Ownership of the process is a key success factor that influences business pro-



cess improvement projects (Dibia, Dhakal, & Onuh, 2014). Ownership is accomplished by establishing a high degree of employee autonomy (Change, Levy, & Powell, 2006). Alue et al. (2016) discusses the importance of stakeholder representation in the teams involved in the development and implementation of continuous process improvement projects. Typically, this is a dedicated project team working together on a process improvement, for example in Kaizen workshops. Klee et al. (2012) describes the importance of such project teams working in Rapid Process Improvement Workshops (RPIWs) as a key approach for successful continuous process improvement. Additionally, the importance of training as a component of employee empowerment has also been highlighted (Change, Levy, & Powell, 2006; Abd Rahman, Imm Ng, Sambasivan, & Wong, 2013). Trainings are especially important in familiarizing employees with the new process before deployment of the process. Training should also focus on increasing the skills of employees with respect to use of information technology (IT) in core processes, continuous process improvement methodologies, and individual skills necessary for them to do their jobs well. However, in order for trainings to have an impact on organizational effectiveness, knowledge gained by employees from the trainings must be properly stored and shared (Abd Rahman, Imm Ng, Sambasivan, & Wong, 2013). The process of storing and sharing knowledge falls under the umbrella of Knowledge Management (KM).

To summarize best practices in people empowerment described in literature, at each stage of the continual process improvement project, employees should be empowered by: (a) establishing a high degree of employee autonomy and ownership (Change, Levy, & Powell, 2006), (b) ensuring stakeholder representation in dedicated project teams (Klee, Latta, Davis-Kirsch, & Pecchia, 2012), and (c) providing employee trainings (Abd Rahman, Imm Ng, Sambasivan, & Wong, 2013).

# 4.1.3 Process Optimization

The first principle for optimization of the selected business process is that it must be driven by customer-orientation. The importance of 'customer-focus' to the success of continuous process improvement has been emphasized by numerous researchers (Kapanowski, 2016; Johnston & Mehra, 2002; Mendelssohn, 2015). Change et al. (2006) describes customer-focus as a key success factor, playing a



role in organizational culture and in organizational structure. Organizational culture refers to customer-focus in strategic thinking, and organizational structure refers to ensuring good relationships with customers and suppliers. In a customer-oriented organization, the selection of processes that need to be optimized should be driven by identification of financial benefits, human resource benefits and customer-orientation benefits (Figure 9, Uusitalo, Hakala, & Kautonen, 2008). Uusitalo et al. (2008) recommends that focusing on merely customer satisfaction is not enough. Instead, the savings that the optimized process can bring to the company must also be taken into consideration. Another best practice in optimization of processes is proper documentation of the new process. This should include diagrams describing the flow of activities, as well as information of the people, systems, software, equipment, information and documents needed to accomplish the new process (Mendelssohn, 2015; Aleu & Van Aken, 2016). Documentation of lessons learned during the continuous improvement process, and documentation and dissemination of goal achievements with stakeholders have been also identified as critical success factors (Aleu & Van Aken, 2016).

To summarize best practices in process optimization described in literature, at each stage of the continual process improvement project, the selected process must be optimized by: (a) making the process more customer-focused (Kapanowski, 2016), (b) identifying its financial, human resource and customerorientation benefits (Uusitalo, Hakala, & Kautonen, 2008), and (c) documenting of the new work process (Mendelssohn, 2015).

#### 4.1.4 Performance Measurement

Performance measurement is necessary in order to determine how well a targeted process for improvement is working, and if it is achieving its goals (Hammer, 2007; Bond, 1999). Bond et al. (1999) proposes that each stage of the continuous process improvement has its own characteristics which should inform the team when selecting the key performance metrics that will be measured. Monitoring and controlling of the improved process is of particular importance. In 'The Process Audit' by Michael Hammer (2007), a framework is presented that helps companies to access their readiness and 'maturity' in deploying and succeeding in process transformation (Hammer, 2007).



#### 4.2 Customer Knowledge Management

Customer knowledge is an asset for the organization that should be correctly harnessed and used. Customer knowledge has been shown to enhance competitiveness, customer satisfaction and customer retention (Kapanowski, 2016). Customer knowledge occurs in three forms - 'knowledge for customers', 'knowledge about customers', and 'knowledge from customers' (Gebert, Geib, Kolbe, & Brenner, 2003). 'Knowledge for customers' is the information that the organization provides to customers to meet their knowledge needs, such as productor supplier information. 'Knowledge about customers' include customer preferences, purchasing history, and expectations which are captured in the Customer Relations Management (CRM) system to enable a company provide personalized service to the customer. 'Knowledge from customers' represents the customer's knowledge about products, suppliers and the market. 'Knowledge from customers' is one of the most valuable knowledge streams for the company since it provides data for future product development, product and process improvements, and for other continuous improvement activities within the company (Selden & MacMillan, 2006). Customer relationship management (CRM) systems and specifically the Complaint Management process provide companies with a significant source of customer knowledge (Stauss & Seidel, 2004; Uusitalo, Hakala, & Kautonen, 2008). Unfortunately, many companies do not sufficiently utilize the customer knowledge that flows through their complaint management process due to lack of processes for capturing customer knowledge (Linder, Schmitt, & Schmitt, 2014).

The field of Knowledge Management (KM) has the goal of improving the value of knowledge as a resource within organizations. The knowledge asset of an organization encompasses both the 'individual knowledge' held by individual members of an organization as well as the 'social knowledge' which represents the general information and data of the organization (Navarro, Dewhurst, & Eldridge, 2010). Knowledge management frameworks and practices provide organizations with ways of collecting, storing, and using their knowledge asset in order to make the organization more competitive and innovative in today's competitive marketplace. Both large corporations and small-or-medium sized enterprises can benefit from implementing knowledge management practices. One way in which knowledge management can be beneficial is in retaining knowledge within the company, and managing knowledge lost when key employees move to other companies.



Knowledge management would ensure that the knowledge of such employees is captured and shared within the organization on a regular basis while they work for the organization. Therefore, knowledge management enhances the competitive sustainability of organizations (Andone, 2009). As shown in Table 8 there are many types of knowledge management solutions that can be implemented by companies (Hellebrandt, Heine, & Schmitt, 2018). However, the choice of what to implement is dependent on the organization's context and resources.

Categories	Knowledge Management Solutions	Description	
Lessons learned & Best practices	Lessons learned, Best practices, Story telling	Designed to systematically collect evaluate and consolidate experiences	
Knowledge communities	Communities of practice, Think tanks, Knowledge market, Knowledge café	Pursue the extension of organization members' capabilities and knowledge	
Education & Training	E-learning	Aims at the application and targeted advancement of organizational knowledge with the help of digital tools	
Expert Search & Investigation	Knowledge maps	Provides structures and platforms which enable the identification of experts or other knowledge carriers within an organization	
(Un)controlled interaction opportunity	E-mail, Social networks	Refers to real or virtual areas in an organization where employees talk informally allowing knowledge to flow	
Information transfer & Allocation	Viral knowledge center, Document management system, Newsletter system	Refers to digital platforms, for generating, sharing and refining information. These allow extractin and reuse of data, information and knowledge in a flexible way across the organization	

Table 8. Knowledge Management solutions (adapted from Hellebrandt et al. 2018)

Before beginning the implementation of a knowledge management strategy, it is important for the organization to understand the critical success factors for its implementation. A large range of variables have been reported as critical success factors for knowledge management. Yew Wong (2005) proposes 11 factors relevant to small-or-medium sized enterprises. These include management leadership and support, culture, IT, strategy and purpose, measurement, organizational infrastructure, processes and activities, motivational aids, resources, training and education, human resource management. Navarro et al. (2010) emphasizes the important role of a chief knowledge officer in the successful implementation of



knowledge management. The chief knowledge officer is usually a leader who drives the design, implementation and oversight of an organization's knowledge management system. An organization's knowledge management system could include libraries, knowledge databases, human resources and computer networks. Hellebrandt et al. (2018) provides a systematic method for selecting knowledge management solutions so that they fit the organizational setting (Hellebrandt, Heine, & Schmitt, 2018). Typically, the chief knowledge officer is responsible for choosing the knowledge framework that is appropriate for a specific organization (Navarro, Dewhurst, & Eldridge, 2010).

Knowledge Management Performance Measurement (KMPM) is used to evaluate whether the implemented Knowledge Management solutions are working (Andone, 2009). Performance measurement is important because it guides management decisions about what to improve and what to reject during the implementation of a knowledge management platform. Measurement also gives management the confidence to continue supporting and maintaining knowledge management resources and processes (Lee & Wong, 2015). Although knowledge management practices have been implemented in many large multinational corporations, the associated performance measurement has not been standardized. Numerous models, methods and tools for knowledge management performance measurement in large organizations as well as in small-or-medium sized enterprises have been reported (Andone, 2009; Lee & Wong, 2015). Suggested methods include using the Balanced Scorecard, evaluating Return-On-Investment or using employee surveys (Andone, 2009).

Extracting best practices in knowledge management from the literature reviewed, four critical success factors emerge: (a) ownership of the process by a chief knowledge officer (Navarro, Dewhurst, & Eldridge, 2010), (b) implementation of a knowledge management framework (Hellebrandt, Heine, & Schmitt, 2018), (c) selection of appropriate knowledge management practices (Yew Wong, 2005), and (d) measurement of knowledge management performance (Lee & Wong, 2015).



# 4.3 Integrating Customer-Oriented Continual Process Improvement and Knowledge Management

The concept of integrating complaint management with a knowledge management framework has been explored in existing literature. Gebert et al. (2003) proposes that the customer relationship management (CRM) concept should be combined with a knowledge management concept. The reason given for this proposed merger was that both of these concepts have the same goal, which is to provide the organization with resources to support its business activities and to help it gain competitive advantage. Linder et al. (2014) identifies the need for long-term knowledge transfer in technical complaint management processes, in order for companies to transfer the process improvements or product improvements gained from complaint handling to product lines, production sites or into new product development. Hellebrandt et al. (2018) published a knowledge management solutions framework for long-term complaint knowledge transfer. The proposed framework was tested and found to be robust in providing a systematic method for selecting knowledge management solutions to organizations (Hellebrandt, Heine, & Schmitt, 2018).

The concept of integrating continual process improvement (CPI) with knowledge management has also been explored in existing literature. Barber et al. (2006) explores continuous process improvement in a production setting, and proposes a process-based knowledge management system in that context to support process improvement initiatives. Self et al. (2014) presents a framework that focuses on the strategic integration of the key elements of knowledge management and human resource management, to support continuous process improvement initiatives.

In summary, by extracting keyideas from existing literature on complaint management, continuous process improvement and knowledge management, it is clear that from a business process improvement perspective, it is critical that these three concepts merge together in a single framework. Such an integrated framework is necessary for any organization that wishes to have a truly customer-oriented continual-process-improvement in its existing complaint management process.



# 4.4 Conceptual Framework of this Thesis

This thesis contributes to the existing literature in the field of complaint management by presenting a concept that combines customer-orientation, continuous process improvement and knowledge management in one framework. Organizations can maximize the benefits from their complaint management process by implementing customer-oriented continual process improvement integrated with knowledge management into their complaint management systems. The conceptual framework for this thesis is a Customer-Oriented-Continual-Process-Improvement-with-Knowledge-Management (CO-CPI-KM) framework which is shown in Figure 11.





Figure 11. Customer-Oriented Continual-Process-Improvement with Knowledge-Management (CO-CPI-KM) conceptual framework



In Figure 11, the most important part of the conceptual framework is that it requires that all the actions involved in continual process improvement and knowledge management must be customer-focused. Additionally, during the implementation of this framework, there should be a high level of information exchange between the continual process improvement activities and the knowledge management activities.

Stage 1: Leadership commitment to the continual process improvement project should be demonstrated. The vision of management for the continuous process improvement should be articulated, and management should stimulate employees' engagement. Management should also maintain good top-down communication throughout the implementation process. In this same stage, to initiate the implementation of knowledge management in the continual process improvement, a chief knowledge officer should be selected. This person should be leader who will take ownership of the design, implementation and oversight of the customeroriented knowledge management system.

Stage 2: A dedicated project team of employees involved in the continual process improvement must be empowered by giving them ownership of the project and establishing a high degree of autonomy. It should be ensured that all stakeholders of the complaint management process are represented in the project team. Trainings should be provided to increase the skills of employees in the use of information technology (IT) in core processes, continuous process improvement methods, and finally to familiarize employees with new process before deployment. In this same stage, the Chief Knowledge Officer should introduce the knowledge management framework that is to be implemented and facilitate its implementation with the continual process improvement project team.

Stage 3: The selected process must be optimized by the project team by identifying ways to make the process more customer-focused. At this time, the benefits to the company of improving this process in terms of its financial benefits, human resource benefits and customer-benefits should be identified and documented. The new work process should be also documented, including diagrams describing the flow of activities, as well as information of the people, systems, software, equipment, information and documents involved. Training of the employees (users) of the new work process should be implemented. Finally, the new process



should be deployed into use. At the same time, the knowledge management solutions that have been selected by the Chief Knowledge Officer should be implemented and the customer-oriented knowledge that has been identified during the continual process improvement project should be captured into the knowledge management system.

Stage 4: Performance should be evaluated for the continual process improvement project and the knowledge management system that have been implemented, using the performance measurement tools and keyperformance indicators that have been selected for each of them. Achievement of project goals should be shared with all stakeholders.

After all the stages have been completed, the next cycle of continual process improvement in the complaint management process can be initiated. Lessons learned from the previous cycle should be shared with the new continuous process improvement (CPI) project team before they begin their work.

The conceptual framework for Customer-Oriented Continual-Process-Improvement with Knowledge-Management (CO-CPI-KM) developed and described in this section was used in building the recommendation for improvement of the complaint management process of the case company. This is presented in the next section (Section 5).



# 5 Building the Recommendations for Improving the Complaint Management Process

The findings of the current state analysis are combined with the conceptual framework in order to build the recommendations for improving the complaint management process which is presented in this section. First, an overview of the proposal building process is presented. Next, the findings from the second round of data collection from relevant stakeholders during the proposal building stage are discussed. The third section presents the co-created proposal of recommendations for improving the complaint management process.

# 5.1 Overview of the Proposal Building Stage

The goal of the proposal building stage was to co-create the proposal for improvement of the complaint management process with the relevant stakeholders. This was accomplished by merging the current state analysis findings of the weaknesses of the current complaint management process (Section 3) with the conceptual framework of the thesis; which incorporates best practices in customercentricity, continuous process improvement, and knowledge management obtained from literature (Section 4).

A three-step process was used to propose recommendations for improving the complaint management process. In step 1, an initial proposal was developed by merging the conceptual framework and the process flow diagram of the complaint management process. In step 2, the proposed solutions were presented to relevant stakeholders in two workshops to obtain feedback and suggestions. In step 3, co-creation of the proposal with stakeholders was accomplished by incorporating the input from stakeholders' feedback into the initial proposal (discussed below in Section 5.2).



#### 5.2 Stakeholder Input to the Initial Recommendations

In the current state analysis, it was identified that there were two main customeroriented activities: customer complaint handling activities for all products of the case company, and customer-support activities for users of Product 3.

With respect to the complaint management process for the case company; the main area of weakness was the existence of gaps within processes. The gaps included (a) lack of official sub-processes for some stages of the process, (b) missing standard operating procedures, (c) inadequate training of stakeholders, (d) lack of version control of documents used in the process, and (e) inadequate IT training on the complaint management software, particularly to support analytics and reporting.

Two main areas of weakness were identified in the current customer-support activities for users of Product 3 which were (a) absence of any official processes or standard operating procedures and (b) lack of customer knowledge management. The lack of customer knowledge management was found to be a significant gap that makes the customer-support process for Product 3 particularly vulnerable.

Stakeholders gave feedback and suggestions of solutions to address the areas of weaknesses in the complaint management process. A summary of the input from the stakeholders have been categorized into the key focus areas that were identified during the current state analysis. The focus areas were (a) forms and templates (Table 9), (b) Missing processes (Table 10), (c) standard operating procedures (Table 11), (d) trainings for stakeholders (Table 12) and (e) analytics and reporting (Table 13).

The stakeholders suggested that the forms and templates for customers and the R&D unit should be improved. This will make the forms easier for customers and stakeholders to understand and use (Table 7). Version control of the forms was also noted to be necessary. The complaint form should be comprehensive to ensure that Technical Services is able to capture all the complaint information from the customer. Additionally, the complaint investigation report template must be improved to capture information needed by Technical Support such as the name of the investigation owner.



#### Table 9. Forms and templates

Key focus area from CSA (from Data 1): Forms and templates					
Suggestions from stakeholders (Data 2)	Description of the suggestion				
Complaint form improve- ment	The forms used in the complaint management process should be version controlled.				
	The complaint form should cover all important infor- mation relevant for the investigation.				
	The complaint form should be easy to update.				
	The complaint form could be in a web format. A cus- tomer could select from given choices and would not be able to submit without having filled in all the critical in- formation.				
	The complaint form sent to customers should not be too complicated.				
Complaint investigation report form improvement	The complaint investigation report form should include the author's name as this is useful to Technical Support who write the customer facing report.				

Suggestions for addressing the lack of official sub-processes in the complaint management process have been summarized in Table 10.

Table 10. Lack of official sub-processes for some stages of the process

Key focus area from CSA (from Data 1): <u>Missing Processes</u>				
Suggestions from stakeholders (Data 2)	Description of the suggestion			
Return goods process	Return goods process and Notification of received			
Notification of received goods	goods processes: these are crucial parts of the com- plaint handling process and should be implemented.			
Customer support activi- ties for users of Product 3	The lack for processes for customer support activities for users of Product 3 should be addressed by Product Management and R&D management. Once a new pro- cess is defined, it should be adhered to without any ex- ceptions.			
Process for indicating time needed for investi- gation	A process for indicating the need for additional time for investigations already exists in another branch of the case company. A similar process could be implemented the case company.			



Stakeholders agreed that the missing processes need to be built in order for the complaint management process to work efficiently.

The Return Goods process in particular was considered to be essential. There were many comments about customer support activities for users of Product 3 since there are no existing process at the moment. In particular, it was recommended that the Product Manager needed to be involved in defining and implementing the new process for customer support activities for users of Product 3.

Stakeholder suggestions to address the weakness of missing standard operating procedures for some activities in the complaint management process have been summarized in Table 11.

Key focus area from CSA (from Data 1): <u>Standard Operating Procedures</u>						
Suggestions from stakeholders (Data 2)	Description of the suggestion					
Complaint report writing guidelines	This SOP is a nice-to-have, but not a priority.					
Data storage guidelines for complaint data	Data storage guidelines are needed.					
Clear SOPs about cus- tomer samples – ship- ping, receiving, handling, risks etc.	This SOP is a nice-to-have, but not a priority.					
SOP for processes for customer complaints or	Tech Support should have a role in processes for supporting users of Product 3.					
Product 3	SOP for supporting users of Product 3 are needed and critical.					
	SOP for supporting users of Product 3 is something that product management should also be involved in developing.					
	There should be a separate SOP for customer com- plaint management and a separate SOP for customer support activities.					
	SOP for supporting users of Product 3 should contain all the stakeholders' contact details and their responsi- bilities. External stakeholders' representatives in differ- ent continents should also be listed.					

#### Table 11. Standard Operating Procedures



The suggestions focused on improving customer support activities for users of Product 3, since standard operating procedures are not available. It was also recommended that priority be placed on two of the most important SOPs which were SOP for customer support for users of Product 3 and SOP for data storage.

Stakeholder recommendations to address the inadequate training of stakeholders in the complaint management process have been summarized in Table 12. There was unanimous agreement that training of stakeholders was essential for the efficiency of the complaint management process. The main suggestions focused on providing training of Technical Support personnel especially for new processes that would be implemented, and for collection of complaint information from customers. Training of stakeholders on the QM software, in order to increase their ability to do complaint history searches with the software, was also considered important.

Key focus area from CSA (from Data 1): <u>Training for Stakeholders</u>					
Suggestions from stake- holders (Data 2)	Description of the suggestion				
Training of Technical sup- port and Field Application Scientists on the products	Training is one the most important solutions for improv- ing the complaint process.				
	Training must be provided to Tech Support for all new processes that are created, such as the Return Goods process.				
Short training document for Tech support about col- lecting of necessary com- plaint information	Training for Tech Support on collecting complaint infor- mation is one of the most important solutions.				
QM software training docu- ment for searching of rec- ords	Training on the searching functions in the QM will en- sure that the software can be used more efficiently.				
	It may be good for complaint investigation owners in R&D to provide some keywords for the complaint to that could be used in future searches in QM software				
Training of investigation owners (Complaint pro- cess, Risk impact assess- ment, investigation reports)	Training is always needed and should be one of the pri- orities				

#### Table 12. Trainings for stakeholders



Stakeholder feedback to address inadequate IT training in the complaint management software, particularly to support analytics and reporting in the complaint management process have been summarized in Table 13. Most stakeholders did not know about the availability of software accessory tools that could be used with the QM software. All stakeholders found the possibility of improving the ease of reporting from QM software to be a very good idea.

#### Table 13. Analytics and Reporting

Key focus area from CSA (from Data 1): <u>Analytics and reporting</u>					
Suggestions from stake- holders (Data 2)	Description of the suggestion				
Implement software tools/ accessory to support re- porting from QM software	The QM software can be difficult to use and therefore support for its use would be beneficial.				
An accessory tool would be a helpful solution that would save time.					

The stakeholder suggestions and recommendations presented in Table 9 to Table 13 were used in co-creating the initial recommendations for improvement of the complaint management process which is presented in the next section (5.3).

# 5.3 Recommendations to Improve the Complaint Management Process

The co-created proposal for improving the complaint management process of the case company is presented in Figure 12 and Figure 13. The recommendations for improving the Customer Support process for Product 3 is presented in Figure 14 and Figure 15. The recommendations have two purposes, (a) to introduce customer-focused continuous process improvement to address the process gaps (weaknesses) in the current process, and (b) to introduce a customer-focused knowledge management system in order to capture and use the customer knowledge that flows through the complaint management process.

As shown in Figure 12, there are four stages in the improvement of the complaint management process. The most important requirement for all four stages is that



all the actions involved in continual process improvement and knowledge management must be customer-focused in order to resolve customer complaints efficiently and promote customer loyalty. For each stage, the details of improvement actions have been described in Figure 13.

In Stage 1, it is recommended that management's long-term commitment, leadership and vision for the continuous process improvement should be communicated to all stakeholders. Management must stimulate employees' engagement and maintain good top-down communication. Additionally, to initiate customer-oriented knowledge management activities, management should assign a 'chief knowledge officer', who will lead the knowledge management activities. The first task of the 'chief knowledge officer' is to select a knowledge management framework which will be used in the complaint management process.

In Stage 2, it is recommended that the project team for the continuous process improvement is formed. All stakeholders should be represented in this team. The project team should be empowered to do the project well by being given a high degree of ownership and autonomy for the project and be provided with training on CPI methods and tools. The Chief Knowledge Officer should select, prepare and introduce the knowledge management framework to the project team. With the aid of this team, all the infrastructure needed to implement the framework, for example knowledge databases, human resources and computer networks, should be implemented.

In Stage 3, it is recommended that the customer-oriented optimization of processes will be done. The continuous process improvement activities can be performed in a series of Kaizen events over a course of time. The new processes, forms, trainings and SOPs that are needed have been described in Figure 13. The project team must focus on making the processes more customer-centric and document the processes' financial, human resource and customer-focused benefits. The knowledge management solutions that have been selected by the chief knowledge officer, such as lessons learned, knowledge communities, information transfer, education and training can then be implemented. Once trained, the stakeholders can begin to use the new knowledge management practice to capture knowledge gained from customer complaints.



In Stage 4, it is recommended that performance evaluation of the improved customer management process and the knowledge management process will be performed. Performance measurement should guide management decisions about what to improve and what to discard in the knowledge management platform. The Project Team will also review the project's successes and lessons learned. The achievements of project goals should be shared with all stakeholders. Figure 12 illustrates the recommendations for improving the complaint management process.





Figure 12. Initial recommendations for improving the complaint management process

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# Recommendations for Improvement of Complaint Management Process of the Case Company

# **Details of Recommended Actions**

	ACTIONS	ACTIVITIES			ACTIONS	ACTIVITIES			
	CPI: Management commitment	1. Demonstrate long-term commitment and vision					Forms	1. Complaint form improvement	
	and Leadership	2. Stimulate employees' engagement						2. Complaint Investigation Report form	
STAGE 1		3. Maintain good top-down communication							
	KM: Appointment of a Chief	1. Appoint a chief knowledge officer				Complaint Initiation:	Processes	1. Return Goods process	
	Knowledge Officer	2. Select Knowledge Management Framework					Trainings	1. Training of Technical Support and Field	
								Application Scientists on products	
		+						2. Training for Technical Support about collecting	
	ACTIONS	ACTIVITIES			CPI: Process			of necessary complaint information	
	<b>CPI:</b> Creation of CPI project team (All stakeholders	1. Training of Project team on CPI methods and tools		STAGE 3	optimization	Complaint	SOPs	1. Data storage guidelines for complaint data	
	represented)								
STAGE 2	KM: Implement a Knowledge	1. Introduce the selected Knowledge Management				Processing:	Trainings	1. Training of R&D on complaint process, risk	
	Management framework	framework to stakeholders	)			Trocessing.		impact assessment and complaint investigation	
		2. Implementation of framework (for eg. knowledge						reports	
		databases, human resources and computer networks)						2. Training of R&D on searching of records in the	
								quality management software	
						Complaint	Trainings	1. I raining for Quality assurance on analytics	
			1			Response:	1 1 1 1	software tool to support analytics and reporting	
	ACTIONS	ACTIVITIES			км:	Implement the selected Knowledge Management Solutions (lessons learned,			
	CPI & KM: Performance	1. Key Performance Indicators for the improved			Implementation	knowledge communities) Capture customer-oriented knowledge			
STAGE 4	Measurement	process			of Knowledge				
		2. Evaluation of Project Success and Lessons learned			Management				
		3. Sharing of goal achievements			solutions				

Figure 13. Details of initial recommended actions for improving the complaint management process

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#### 5.4 Recommendations to Improve the Customer Support Process

In the co-created recommendations for improving the customer support process for Product 3, it is recommended that there should be Product Management's longterm commitment before any process changes begin (Figure 14 and Figure 15). Additionally, it is important that all stakeholders including external stakeholders' units are represented in the project team. As shown in Figure 14, there are four stages in the improvement of the customer support process, similarly to the steps described for the complaint management process. For each stage, the details of improvement actions have been described in Figure 15. The most important requirement is that all actions involved in continual process improvement and knowledge management must have a goal of addressing customer's needs and turning them into loyal customers.

The goal of complaint management is to convert dissatisfied customers to loyal customers. The recommendations for improving the customer complaint process of the case company aim at achieving this target. The proposed recommendations ensure that the weaknesses in the current process are removed. The gaps in the process are addressed by implementing continuous process improvement in the complaint management process. The implementation of knowledge management framework and practices within the complaint management process ensures that organizational knowledge is captured and retained as a resource to enhance customer support activities. The proposed recommendation also provides details of the specific processes, standard operating procedures, forms, and trainings that need to be created in order to improve the workflow within the complaint management process.

The initial recommendations for improvement of the complaint management process were co-created with the relevant stakeholders. Subsequently, the initial recommendations were validated by the management and this is discussed in Section 6.





Figure 14. Recommendations for improving customer support process for users of Product 3

Metropolia

## Recommendations for Improvement of Customer Support Process for Users of Product 3

#### **Details of Recommended Actions**

	ACTIONS	ACTIVITIES	]				
	CPI: Product Management And	1. Demonstrate long-term commitment and vision	1				
	R&D Management Commitment	2. Stimulate employees' engagement					
STAGE 1	and Leadership	3. Maintain good top-down communication					
	KM: Appointment of a Chief	1. Appoint a chief knowledge office	1				
	Knowledge Officer	2. Select Knowledge Management Framework					
		I	]				
	ACTIONS				ACTIONS	ACTIVITIES	
	CPI: Creation of CPI project	1 Hiring into Tech Support: Product group 3				Process	
	team (All Stakeholders including	competency at Technical Support level			<b>CPI:</b> Creation of new processes		
	external stakeholders)	2. Trainings in CPI tools and methods					
STAGE 2	KM: Implement a Knowledge	1. Introduce the selected Knowledge Management				Trainings	
	Management framework	framework to stakeholders					
		2. Implementation of framework (for eg. knowledge					
		databases, human resources and computer networks)		STAGE 3			ŧ
				511102.5		SOPs	1.
		•					gro
			1				2. [
	ACTIONS	ACTIVITIES					Cus
	CPI & KM: Performance	1. Key Performance Indicators for the improved			KM:	1. Implemen	nt the
STAGE 4	Measurement	process			Implementation	(lessons lear	ned,
		2. Evaluation of Project Success and Lessons learned			of Knowledge	2. Capture c	usto
		3. Sharing of goal achievements			Management		

Figure 15. Details of recommended actions for improving the customer support process for users of Product 3



#### 6 Validation of the Recommendations

This section discusses the validation of the initial recommendations for improvement of the complaint management system. First, an overview of the validation process is presented. Subsequently, the feedback received during the validation is summarized. Details of the changes that were made to the proposal in response to the feedback are discussed. The section concludes with a presentation of the final recommendations.

#### 6.1 Overview of the Validation Stage

The goal of the validation stage is to review the proposed recommendations against the objectives of the study and to evaluate whether the objectives have been successfully achieved in the outcome of the study. The objective of the thesis was to propose recommendations for improving the complaint management process the case company. The specific areas of improvement were determined by performing a current state analysis of the complaint management process. From this analysis, gaps in the existing process and inadequate knowledge management were determined to be the main weaknesses of the current process. Best practices from literature and stakeholder feedback were then used to develop the initial recommendations which propose the implementation of customer-oriented continual process improvement and knowledge management into the complaint management process.

In this validation stage, the initial recommendations for improving the complaint management process were subjected to management evaluation. The validation was conducted in two phases: phase 1 involved validation by the management of Research & Development unit, and phase 2 involved validation by Product Management and by the management of the Technical Support unit. The managers who participated in the validation of the recommendations were the Research and Development Manager, the Senior Research and Development Manager, the Research and Development Supervisor, the Product Manager, the Technical Support Leader for Northern Europe, and the European Technical Services Manager. The validations were conducted by presentation of the recommendations to the man-



agement, followed by an extensive group discussion. The feedback from management in the validation stage was incorporated into the initial proposal in order to achieve the final version of recommendations. The feedback collected in the validation formed the third data collection round for the thesis and is presented the next section.

#### 6.2 Stakeholder Input in the Validation Stage

The initial recommendations for improving the complaint management process were well received by the management. The management expressed the opinion that the proposed recommendations were comprehensive in solving the existing business problem, and satisfactorily met the set objectives for the study. The discussion during the validation meeting focused on changes to the recommendations, and the next steps towards implementation of the recommendations. The feedback and suggestions from management is summarized in Table 14 and discussed in detail below.

In both validation meetings, management feedback on 'customer-oriented continuous process improvement' was positive and the findings of the study were considered to be 'thought-provoking'. It was noted that the proposed recommendations heavily involved the Technical Support unit. Therefore, it was suggested that it is essential to expand the investigation to include the global Technical Support unit, since the current study focused on the European Technical Support unit only and involved a limited number of Technical Support Specialists. Such a study would give a more comprehensive picture of the process improvements needed at the global level. There was strong support particularly for the actions that included training of Technical Support Specialists. Management agreed that Technical Support Specialists were inadequately trained on the case company's products. Training of Technical Support unit by the Research and Development unit would be well-received. Management emphasized the need to include United States Technical Support unit in implementation plans, especially with regard to training on the products.

Additionally, management agreed strongly with the recommendation for 'a knowledge management strategy' within complaint management. The need for



knowledge management at a broader level, beyond the complaint management process, was also emphasized. Consistent with the findings of this study, it was noted that other products also had similar challenges with knowledge management. During the group discussion, the value of customer knowledge was accentuated by the management. Within the organization, customer knowledge is used to support management's decisions about product and process improvements. Customers are a massive knowledge base for the organization with regard to products' performance. Therefore, implementation of knowledge management was considered an important solution.

Management feedback included changes to be made to the initial recommendations. There were some reservations about linking the improvement of the complaint management process with the hiring of new personnel into the organization as indicated in the initial recommendations. These included hiring a chief knowledge officer to drive the knowledge management activities, and a technical support specialist with extensive experience with the technology used in Product 3 to increase the competency within the Technical Support unit. From management's perspective, any recommended actions that involved hiring of additional personnel would be a longer process and could not be rapidly implemented. Therefore, the management suggested that it would be more appropriate to train the people who were currently in the organization and assign them to perform these recommended tasks or roles. Therefore, this feedback was incorporated into the final recommendation document.

For the next steps, it was suggested that more work could be done to assess the business impact of the recommended actions. It would be beneficial to have a financial quantity that demonstrates to the business leaders how beneficial implementation would be to the business. For example, computing the financial value by measuring the length of time taken by the current process and comparing it to the estimated time the process would take after the new processes have been implemented. This could demonstrate how efficient the new process would be over the current process. As a next step, it was also suggested that it would be beneficial to analyze the complaint management process of other products within the business division. This would include a review of complaint forms, and identification of the gaps in the complaint management process for these other products.



This was suggested with the goal of ensuring that the entire division has a standard complaint management process for all products, without product-to-product variations.

For the implementation of the recommendations, the management stated that implementation can be challenging since it can be difficult to keep stakeholders engaged within the implementation process. Management requested that the study and its findings should be presented to a wider audience including all the stakeholders, and not just those that had been involved in the project. The main goal will be to ensure that a larger number of people within the stakeholder units become aware of this project, in order to generate enthusiasm for the implementation of the recommendations. The management expressed their commitment to implementing the proposed recommendations.

Validation stage (Data 3)				
Feedback from man- agement	Changes to the initial recommendations			
Hiring of new personnel	It would be more appropriate to train the people who were currently in the organization and assign them to perform these recommended tasks or roles			
Suggestions from man- agement	Next steps towards implementation			
Greater involvement of Technical Support unit in the project	Broaden the scope outside Technical Support – Europe to include the global Technical Services organization			
	US Technical Support must be included in the implementation plans			
Strengthen the business impact analysis	Quantify the benefits of the process improvement and present the benefits with the study recommen- dations to justify the need for these improvements to the business leaders			
Comparison to the com- plaint process for other products in Microbiology division	Find out what is working well and how to harmo- nize the current complaint process across the divi- sion			

Table 14. Feedback and suggestions during validation stage



#### 6.3 Finalization of the Recommendations Based on Validation Data

The feedback that was given by the management during the validation stage was incorporated to create the final recommendations. The document was updated to reflect that a chief knowledge officer would be assigned from within the organization. Additionally, for Customer Support activities for users of Product 3, the recommendation to hire this competency into Technical Support unit was updated to assign an owner responsible for competency at Technical Support level.

#### 6.4 Final Proposal

The final recommendations document that was presented to the case company is presented in Appendix 4. The recommendations are composed of two parts. In the first part, 'Recommendations for the improvement of the complaint management process of the case company' is presented along with the details of proposed actions in the different parts of the recommendations. This is followed by 'Recommendations for improving Customer support process' of Product 3, and the accompanying details of proposed actions in the different parts of the recommendations.



#### 7 Conclusions

An executive summary as well as the managerial implications of the outcome of this thesis is presented in this section. The evaluation of the purpose of the thesis in relation to its initial objective is also assessed in this section.

#### 7.1 Executive Summary

The goal of complaint management is to turn dissatisfied customers into satisfied customers, in order to secure customer loyalty, customer retention and the organization's future revenue. At the case company, the complaint management process plays an important role in the organization's customer relationships. However, the complaint management process is inefficient in certain aspects which results in the utilization of significant amount of resources within the Research and Development unit. The business challenge for the case company is to improve the customer complaint management process in order to improve its efficiency as well as deliver the customer support necessary to enhance the satisfaction of its customers. To this end, the objective of this thesis is to provide recommendations for improvement of the complaint management process of the case company, after thoroughly assessing the processes and outlining the weaknesses in the process.

To achieve this objective, the study in this thesis was done in four phases namely current state analysis, literature review, proposal building and validation. The current state analysis was composed of interviews and workshops with all the stake-holders, and review of internal documents. The outcome of the current state analysis was a detailed description of the current complaint management process and identification of the main areas of weakness in the process. The main areas of weakness in the complaint management process are the existence of gaps within and between processes, and lack of overall knowledge management strategy. The literature review focused on extracting the best practices in complaint management, continuous process improvement and knowledge management from existing literature to address the areas of weakness identified in the current state analysis. A conceptual framework outlining the detailed processes was then devel-



oped. Proposal building and validation involved co-creation of the recommendations for improvement of the complaint management with stakeholders in two workshops, and validation of the recommendations with management.

Recommendations: In order to improve the complaint management process of the case company, it is recommended that customer-focused continual process improvement should be carried out in order to fill the gaps in the current process, and knowledge management infrastructure as well as knowledge management practices should be integrated into the complaint management process. During the process improvement, the most important requirement is that all activities involved should be customer-focused; aimed at meeting customer needs and improving customer satisfaction. It is recommended that the process improvement should be done in four stages: (1) leadership commitment to continuous process improvement should be demonstrated, and a chief knowledge officer should be selected, (2) a project team composed of stakeholders should be put together and trained on continuous process improvement tools, and a knowledge management framework (such as knowledge databases, human resources, computer networks) should be implemented, (3) kaizen events should be organized in many improvement cycles to develop new sub-processes, standard operating procedures, forms, and trainings, and knowledge management solutions (such as lessons learned, knowledge communities, information transfer, education and training) should be implemented during this stage to begin capturing the knowledge gained from customer complaints, and (4) performance evaluation of the process improvements and the knowledge management system should be performed and reported to stakeholders and to management.

Validation of the initial recommendations was performed. The validation consisted of meetings with management to present the recommendations and obtain their improvement suggestions and feedback. The recommendations were received well and considered to be implementable. Feedback focused on the difficulty of hiring new employees to roles proposed in the initial recommendation. It was suggested that a current employee could be assigned to fulfil the recommended roles and tasks. The feedback from management was incorporated into the final version of the recommendations for improving the complaint management process of the case company.



These recommendations on improving the complaint management process bring value to the case company because it promotes the corporate goal of having high customer satisfaction and promotes customer-centricity within the organization's internal processes. It also has a business impact because improving the customer complaint process promotes customer satisfaction and loyalty, leading to future revenue for the company.

#### 7.2 Managerial Implications

The recommended implementation of continuous process improvement practices into the complaint management process will be easy for the organization to adopt since the case company is an organization that highly values and pursues practical process improvement in the workplace. The stakeholders in the case company have been making practical process improvements for many years and would find it easy to implement this practice.

The implementation of continuous process improvement will have a low financial investment, especially related to providing training to stakeholders, and will give the company a high return-on-investment in that customer satisfaction secures the future revenue of the company. The implementation of the recommended knowledge management into the complaint management process, on the other hand, will involve a larger change in the process for stakeholders. Therefore, adopting this solution would require a greater deal of change management in order for it to succeed. This solution may require that the case company imports a knowledge management expert from the larger organization or outsource the project to a knowledge management consultancy. Financially, the investment required to implement this solution could be higher, for example it may require investment in information technology infrastructure, but it will have long-lasting returns. This is because knowledge management frameworks and practices will provide ways of collecting, storing, and using the organization's knowledge in order to make it more competitive and innovative in today's competitive market place.

It is recommended that continuous process improvement should be implemented together with knowledge management in order to maximize the rewards of improving the complaint management process.



#### 7.3 Thesis Evaluation

This thesis is based on design research (applied action research) approach. Design research investigates a unique and specific problem, develops a solution, and then proposes theories based on this solution to generally address certain group of problems (Van Aken, 2004). The quality of the thesis is evaluated on the criteria of validity, reliability, logic and relevance within the context of design research.

The objective of this thesis was to provide recommendations on how to improve the complaint management process of the case company. A thorough assessment of the current complaint management process was undertaken. The outcome of the thesis, which are the recommendations for improvement, directly addresses the areas of weakness in the current complaint management process and propose comprehensive solutions that will lead to a long-term and lasting improvement in the complaint management process. Therefore, the outcome of the thesis fulfils the initial objective of this thesis.

This thesis focuses on the internal phases of the complaint management process (within the company), with the aim of improving the efficiency of the internal process. Therefore, customer satisfaction with the complaint management process was out of the scope of this thesis and no customer interviews were conducted. However, it would be valuable to the company to have a customer journey mapping within the complaint management process and a good understanding of customer satisfaction with the complaint process. This customer satisfaction information will provide a feedback for process improvement and complete the loop in terms of comprehensive knowledge management in the complaint management process.

#### 7.3.1 Validity and Reliability

Validity in research refers to how rigorous and relevant the methods used in the research are. Validity also addresses how accurately the methods corresponds to accepted methods within the field for quantifying similar phenomenon. Dresch et al. (2015) states that among other criteria, the validity of the research work ensures its acceptance as a significant and well-conducted study. In this study, the validity



of the data collection was ensured by using a variety of data collection methods including interviews which were recorded and documented with extensive field notes, workshops and internal documents review. Validity of data analysis in this thesis was ensured by using thematic content analysis method. Additionally, a business process modelling method that is accepted within the business process development field, Business Process Model and Notation (BPMN) 2.0, was used in detailing the business processes (Silver, 2011). A well-established method for assessment of requirements and prioritization, the MoSCoW analysis method, was employed in prioritization of stakeholders' requirements for the process improvements within this study.

Reliability in research refers to the reproducibility of the findings of the research study. Researchers must clearly state their research paradigm and detail their research methods in order to ensure the reliability of their results (Dresch A., 2015). Reliability means that the results can be reproduced at a different time and by different people. In this study, reliability was ensured by two methods: (1) clear thorough documentation of the steps and methods that were utilized in the study, and (2) by triangulation in data collection. The steps used in the research have been clearly documented in the Research Design (Section 2.2) and Data Collection and Analysis (Section 2.3). Additionally, the appendices of the thesis contain detailed field notes from interviews, data analysis results, and datafrom participants' feedback and suggestions. Triangulation in data collection was achieved by multiple rounds of data collection in which the results from the initial data collection stage was iterated in different stakeholder workshops, ensuring that the data was reliable.

#### 7.3.2 Logic and Relevance

Logic in research refers to applying reasoning, in both a deductive and inductive way, in a research study. The logic of the study was ensured by following the logic of a design research (Easterday, Rees Lewis, & Gerber, 2018). In accordance with design research logic, the study started with problem awareness stage which was followed sequentially by the suggestion stage, developmental stage, evaluation stage, conclusion stage and finally communication stage. The logic in the study was ensured by preparing a coherent and rational research design plan before the study was began, and adhering to this plan throughout the study.



Relevance in research refers to whether the knowledge created in the research has a meaningful impact in practical settings (Dresch A., 2015). The relevance of the study to management was ensured by verifying the importance of the research objective with the management of the organization before beginning the study. The relevance of the outcome of the study to the organization was also ensured by making sure that the outcome of the study promotes the corporate mission, vision and strategy of the case company. Finally, the relevance of the study to the larger field of complaint management in businesses and organizations was ensured by proposing a conceptual framework and solutions that are based on best practices in existing literature, and that can generally address similar challenges in complaint management processes in large organizations.

#### 7.4 Closing Words

According to Barlow (2008), a complaint is a gift. Complaint management is the process for receiving this gift. For the complaint management process to achieve its highest goal of satisfying, even 'delighting' the customer, it has to have a customer-focused and constantly improving processes. For complaint management to achieve its next goal of driving product quality improvements and new product developments, customer knowledge must be captured in a form that makes the knowledge an easily-accessible resource for the organization. The outcome of this thesis provides recommendations of how these goals can be achieved. It was discovered during conducting this study that all stakeholders considered the complaint management process to be very important to the company and its customers. There is enthusiasm to implement the solutions that were co-created with stakeholders and to see the maximization of the organization's benefits from the complaint management process.



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Respondent Number	1				
Position Department	Technical Support Specialist, Technical Support Unit				
Interview Date Duration	Face-to-face interview, 13.1.2020 - 1hr, 16.1.2020 - 1hr				
Topic of Discussion	<ul> <li>Description of role in Complaint Handling Process</li> <li>Data Flow in your processes</li> <li>Workflow in your processes</li> <li>Requirements (Gaps/What is missing)</li> <li>Strengths/Weaknesses</li> </ul>				
Documentation	Field notes				
Requirements	Strengths	Weaknesses			
All the required information related to the complaint must be collected before a Quality Notification is opened.	Customer complaint form is working well.	The case company does not currently have a process in place for product returns.			
Confirmation is needed from the investigation site/owner that shipment of returned goods or samples has been received before a Quality Notification is opened.	The CRM software cap- tures every information related to the complaint, customer complaint process in the CRM software works very well.	Tech support does not know what is required infor- mation in the complaint form, so sometimes a com- plaint may go 'on test' in the CRM system with an incom- plete form.			
Reporting: Complaint in- vestigation report from in- vestigator should be in ed- itable form not pdf.	Overall, the customer complaint process works well.	The case company does not currently have a process for investigator to confirm through the CRM system that returns have been re- ceived.			
Training level evaluation of the customer or distributor would be needed in order to avoid raising unneces- sary customer complaints.		There is no ticketing system for customer contacts and all customer contacts are stored in the selling coun- tries email folders, so tech support has to depend on memory when looking for previous customer con- tacts.			
Training of tech support for the case company's prod- ucts is needed.		There is a time delay be- tween when the complaint is put 'on test' in the CRM sys- tem to when it is raised in quality management system and assigned to investiga- tor, due to the two separate software systems used.			
		Complaint form is not al- ways filled well by custom- ers. Information needed by			

# Appendix 1. Field Notes for Respondent 1 Interview

tech support to answer cus tomer inquiries is not cen- tralised and hard to find.
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Appendix 2: Results of Prioritization of Weaknesses (MoSCoW Analysis)

Results of MoSCoW analysis in the stakeholder workshop performed during the Current State Analysis (Data 1):

REQUIREMENTS	PRIORITIZATION
Collection of all available complaint infor-	
mation	MUST HAVE
Official Process needed	MUST HAVE
Standard Operating Procedures (SOPs)	MUST HAVE
Time	MUST HAVE
Training	MUST HAVE
Searchable complaint history records	SHOULD HAVE
Field Application Scientist (FAS) role	SHOULD HAVE
Follow up after report to customer	SHOULD HAVE
Notifications	SHOULD HAVE
Resources	SHOULD HAVE
Complaint form	COULD HAVE

### Appendix 3: Proposal Building – Stakeholder Suggestions

Key focus area from CS (from Data 1)	Suggestions from stakehold- ers, categorized into groups (Data 2)	Stakeholder Suggestions and Feedback (Data 2)
Forms and templates	Complaint form improvement Complaint inves- tigation report form	<ol> <li>Yes, we definitely need a version control for the forms we used for customer complaint processes. We have some kind of complaint form, but it may vary how much tech support or FAS uses that form. I haven't received much of those forms filled recently. QN report needs a point for confirmed/un- confirmed as I need to report to CRM system the results as unconfirmed report or confirmed report. Sometimes it is not clear by reading the results and conclusions, whether the customer complaint is confirmed or not.</li> <li>I think all proposed improvements are good. Par- ticularly the complaint form part with the aim of having it cover all important information so that it is easy to update (e.g. web form, select from given choices, not able to submit without having all the critical information, etc)</li> <li>Version control is important to make sure the correct documents are used and there's a dedi- cated person responsible for updating the docu- ment.</li> <li>Complaint Form improvement: we'd need to un- derstand who uses the form and how. If sent to customer, the form can't be too complicated. On the other hand, it should contain relevant infor- mation for investigation.</li> <li>Complaint investigation report form: It should in- clude the author name (useful for Tech Support</li> </ol>

Forms and templates: stakeholder suggestions and feedback for co-creation of proposal

#### Appendix 4: Recommendations for Improvement of the Complaint Management Process of the Case Company



### **Recommendations for Improvement of Complaint Management Process of the Case Company**

### **Details of Recommended Actions**

	ACTIONS ACTIVITIES				ACTIONS	ACTIVITIES		
	CPI: Management commitment	1. Demonstrate long-term commitment and vision					Forms	1. Complaint form improvement
	and Leadership	2. Stimulate employees' engagement						2. Complaint Investigation Report form
STAGE 1		3. Maintain good top-down communication						
	KNA: Assign a Chief Knowledge	1. Salast a chief knowledge officer	_			Complaint	Processes	1. Return Goods process
	KWI: Assign a Chief Knowledge					Initiation:		
	Officer	2. Select knowledge ivianagement Framework					Trainings	1. Training of Technical Support and Field
								Application Scientists on products
		<b>—</b>						2. Training for Technical Support about collecting
	ACTIONS	ΔCTIVITIES	1		CPI: Process			of necessary complaint information
	CPI: Creation of CPI project	1 Training of Project team on CPI methods and tools	1		optimization		SOPs	1. Data storage guidelines for complaint data
STAGE 2	team (All stakeholders	1. Hanning of Hoject team of Crimethous and tools				Complaint Processing:		
	represented)			STACE 2				
	KML Implement a Knowledge	1 Introduce the colocted Knowledge Management	-	STAGE 5			Trainings	1. Training of R&D on complaint process, risk
	Nonagament framework	framework to stakeholders						impact assessment and complaint investigation
	Management framework	2 June la station de frances de la service d						reports
		2. Implementation of framework (for eg. knowledge						2. Training of R&D on searching of records in
		databases, human resources and computer networks)						quality management software
						Complaint	Trainings	1. Training for Quality assurance on analytics
						Response:		software tool to support analytics and reporting
		A 0719 (1715)	1		KM:	Implement the s	elected Kno	wledge Management Solutions (lessons learned,
	ACTIONS	ACTIVITIES	-		Implementation	knowledge com	munities)	
	CPI & KM: Performance	1. Key Performance Indicators for the improved			of Knowledge	Capture custom	er-oriented	knowledge
STAGE 4	Measurement	process			Management			
		2. Evaluation of Project Success and Lessons learned			solutions			
		<ol><li>Sharing of goal achievements</li></ol>						
STAGE 4	ACTIONS CPI & KM: Performance Measurement	ACTIVITIES 1. Key Performance Indicators for the improved process 2. Evaluation of Project Success and Lessons learned 3. Sharing of goal achievements			KM: Implementation of Knowledge Management solutions	Complaint Response: Implement the s knowledge com Capture custom	Trainings elected Kno munities) eer-oriented	1. Training for Quality assurance on analytics software tool to support analytics and reporting wledge Management Solutions (lessons learned, knowledge

### Appendix 4 7 (8)



### **Recommendations for Improvement of Customer Support Process for Users of Product 3**

### **Details of Recommended Actions**

	ACTIONS	ACTIVITIES			
	CPI: Product Management And	1. Demonstrate long-term commitment and vision			
	R&D Management Commitment	2. Stimulate employees' engagement			
STAGE 1	and Leadership	3. Maintain good top-down communication			
	KM: Assign a Chief Knowledge	1. Select a chief knowledge officer			
	Officer	2. Select Knowledge Management Framework			

	▼					
	ACTIONS	ACTIVITIES				
	CPI: Creation of CPI project	1. Assign Tech Support owner: Product group 3				
	team (All Stakeholders including	competency at Technical Support level				
	external stakeholders)	2. Trainings in CPI tools and methods				
STAGE 2	KM: Implement a Knowledge	1. Introduce the selected Knowledge Management				
	Management framework	framework to stakeholders				
		2. Implementation of framework (for eg. knowledge				
		databases, human resources and computer networks)				

	ACTIONS	ACTIVITIES			
	CPI & KM: Performance	1. Key Performance Indicators for the improved			
STAGE 4	Measurement	process			
		2. Evaluation of Project Success and Lessons learned			
		3. Sharing of goal achievements			

	ACTIONS	ACTIVITIES			
		Process	1. Implementation of new process for Product group 3 customer support		
STACE 2	<b>CPI:</b> Creation of new processes	Trainings	<ol> <li>Training of Technical Support on Product group</li> <li>Training of all stakeholders on new Product group 3 customer support process</li> </ol>		
JIAGES		SOPs	<ol> <li>Standard Operating Procedures for Product group 3 customer support process</li> <li>Data storage guidelines for Product group 3 customer support data</li> </ol>		
	KM:	1. Implement	t the selected Knowledge Management Solutions		
	Implementation	(lessons learned, knowledge communities)			
	of Knowledge	2. Capture customer-oriented knowledge			
	Management				