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Shifting Focus

Change- and Knowledge Management as a Starting Point for Increased Employee Well-Being in the Ceramic Sanitary Ware Industry

Master's thesis in Quality and Operations Management

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Abstract

Today more than ever, organizations are subject to continuously changing operating contexts and requirements, and thus rely largely on their ability to change to survive. There is also a trend in the current business environment of an increasing focus on employee well-being, which is of even higher importance in a time of change. Employee well-being has been subject to a vast amount of business research, but in practice it is rarely the main focus of companies' operations. Large manufacturing companies are employee intensive and the trend of employee well-being is therefore highly relevant in the sector. For this reason, this study investigates a company in the ceramic sanitary ware (CSW) industry, and its proposed restructuring project. The empirical data was collected through interviews with case company employees and a survey of factory workers. Through applying existing theory on change- and knowledge management on these results, the study identifies reasons for, and barriers to, implementing the case company's restructuring project. Using Porter's Five Forces, the findings were generalized over the CSW industry. Furthermore, the study combines takeaways from change- and knowledge management to improve implementation of large change initiatives. Finally, two recommendations are given for how to increase focus on employee well-being. First, the company should integrate knowledge management practices into the organization's strategy. Second, they should use the explicit knowledge to formulate a change strategy with clear objectives and actions, which clearly aligns with the overall operations strategy and considers employee well-being. Ultimately, this study highlights that while having received much attention in theory, employee well-being still requires more targeted attention within manufacturing companies. Therefore, the provided recommendations may act as a starting point for shifting their focus.

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Keywords: ceramic sanitary ware, knowledge management, change management, employee well-being, operations strategy.

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Gothenburg, January, 2024

Table of Contents

List of Figures and Tables

List of Abbreviations

CE	Central Europe
CSW	ceramic sanitary ware
NE	Northern Europe
SW	sanitary ware

1 Introduction

Today more than ever, organizations are subject to continuously changing operating contexts and requirements, and thus rely largely on their ability to change to survive (Philips & Klein, 2023; McLaren et al., 2023). Moreover, manufacturing companies have long been facing contradictory requirements, and consequently had to face trade-offs between different dimensions (Charpenay et al., 2021; Slack & Lewis, 2020). After about a decade focused on individualization, flexibility, and decentralization, new trends have surfaced promoting a sustainable society and a symbiotic collaboration between employees and machines (Lasi et al., 2014; Coelho et al., 2023). One large manufacturing industry in Europe, inherently facing these shifting requirements, is the ceramic sanitary ware (CSW) industry. In this industry, manufacturing companies have largely seen the same trends as referenced here. Due to ceramics consisting of natural materials and requiring a complex production process, companies have also been battling issues with production quality, cost-efficiency, and working conditions. Going forward, the focus seemingly must shift toward ensuring socially sustainable operations and employee well-being.

The topic of social sustainability, and specifically employee well-being, has been extensively covered in change management theory, which examines the process of continuously adapting an organization to fit the changing needs of internal and external stakeholders (Moran & Brightman, 2000). However, there is no consensus in the theory on how to best ensure well-being in companies undergoing change (Jacobsen & Thorsvik, 2021; McLaren et al., 2023). Presumably, senior managers are keen to incorporate practices to promote employee well-being to remain competitive as employers, but whether it appears in their company strategy remains unclear. Thus, it is interesting to investigate how employee well-being is accounted for in practice in large manufacturing companies. This case study examines an ongoing restructuring project of a company in the European CSW industry. The industry has not been previously highlighted in social research, despite being a significant industry in Europe, totaling a revenue of 2.2 billion EUR in 2006, according to a study performed for the European Commission (ECORYS, 2008).

This study investigates a case company, which will be referred to by an alias, AquaNitor Group. AquaNitor is active in the sanitary ware (SW) industry, which in addition to ceramics includes products behind the wall in a bathroom, such as pipes for supply and drainage or metal hinges for fastening the ceramics. Previously, AquaNitor was producing only the components behind the wall, but since it entered the CSW industry it has become one of the leading actors in the European market. Similar to the trends referenced above, AquaNitor has a decentralized production network for its ceramics plants, resulting in each plant being almost completely independent in terms of purchasing, production technology, and production processes. Consequently, there is significant variation between the production plants in terms of speed and quality of production. Therefore, AquaNitor has initiated a restructuring project to centralize the first step of the production, the slip preparation, to gain more control over the production process. In practice, this entails performing the slip preparation in only one plant, a preparation plant, and thereafter supplying each production plant with slip “ready-mix”. By centralizing the slip preparation, AquaNitor expects benefits such as achieving a more controlled logistics network, economies of scale by processing larger volumes in one place, and reduced waste from the production.

AquaNitor Group is currently conducting a pre-study, investigating the attractiveness of the proposed restructuring project. As implied by the recent research referenced above, the attractiveness of an

investment should be evaluated far past financial benefits to be sustainable in the long-term (Coelho et al., 2023). Thus, when considering a large change initiative, such as AquaNitor's restructuring project, it is essential to consider other reasons to change than increased profitability. In change management theory, employee well-being is a central topic, as change often challenges the status quo, creating resistance and anxiety among workers (Jacobsen & Thorsvik, 2021; McLaren et al., 2023). Therefore, investigating how AquaNitor has handled these issues in the past may provide insight into how to best implement the proposed restructuring project. Moreover, examining the restructuring project's fit with AquaNitor's current operations can further define its attractiveness and ability to allow the company to comply with the current trends. This will be done through analyzing the company's operations strategy, with the insights of Slack & Lewis (2020). It is also interesting to discuss the operating context of AquaNitor. Therefore, the CSW industry is understood through an analysis using Porter's Five Forces (Porter, 1979). Another concept affecting how companies adapt to internal changes is knowledge management, which concerns the process of preserving and exploiting information within a company (Mårensson, 2000). Thus, it is relevant to consider how existing information about both change- and knowledge management can be utilized to effectively implement large-scale change initiatives, and increase focus on employee well-being.

1.1 Aim and Research Questions

The aim of this study is to determine how large manufacturing companies can increase their focus on employee well-being, in an operating context characterized by contradicting requirements. Therefore, the study investigates the reasons for, and the barriers to, implementing the case company's proposed restructuring project, and whether they can be generalized to the European CSW industry. This will be done through answering two research questions:

> RQ1: Why should the case company place large investments in a restructuring project?
>
> RQ2: What barriers do the case company and the European ceramic sanitary ware industry face to implementing a restructuring project?

To fulfill the aim, the study also uses existing theory on change management and knowledge management, and the takeaways from RQ1 and RQ2 to answer:

> RQ3: How can knowledge management and change management models be combined to achieve an increased focus on employee well-being?

1.2 Limitations

This is a case study, and therefore it mainly considers the perspective of the case company. No other actors in the CSW industry participated in the study, and the previous social research on the industry is very limited. Thus, generalizations of the findings for the CSW industry as a whole are based mainly on the industry- and operating context descriptions provided by the case company. Moreover, the time period for study was limited to the fall of 2023, i.e., August 2023 to January 2024, as this is the scope of a master's thesis at Chalmers University of Technology. Partly due to this limitation, this study only concerns some of the regions in Europe where the case company is active. Consequently, interviews were not conducted with representatives of each production plant. Moreover, the study only concerns the case company's operations in the European CSW industry, and no operations in other SW related

industries were included. Finally, the survey was only distributed to factory workers at one plant in NE, due to accessibility issues.

1.3 Report Disposition

This report consists of six main chapters. In this first chapter, an introduction to the research topic, a problem definition, and the research questions have been presented. The second chapter outlines the existing literature relevant to understand the topic and answer the research questions. Thereafter, the methods for the study are described, followed by a chapter on the results of the study. The results chapter presents the empirical findings, including a description of the case company, and partly answers the first two research questions. In the fifth chapter, the discussion, the existing literature is applied to answer all three research questions. Lastly, in the sixth chapter, the conclusions are presented.

2 Theory

This chapter presents the theory which the arguments and conclusions drawn in the discussion use to support their claims. The focus of the research questions is mainly change- and knowledge management, and therefore these topics are most relevant to the study. To understand the operating context of AquaNitor, it is important to also understand the subordinated topics discussed in the section on supporting theory.

2.1 Change Management

As stated in the introduction, change management denotes the process of continuously adapting a company's direction, structure, and capabilities to fit internal and external requirements (Moran & Brightman, 2000). The topic of change management has been popular among researchers since the 1950s, and within operations management, the research offers insights into the way manufacturing companies function and adapt in reality (Bamford & Forrester, 2003). Due to its focus on implementing sustainable change initiatives, change management can also be described as models and strategies to help employees accept organizational changes (Phillips & Klein, 2023). Change management has been of interest to many researchers in the past decade, and there are many models claiming to be universally applicable to all companies and situations. To introduce the topic of change management, it is interesting to consider Kotter's eight step model, which has been popular among organizations and researchers since its introduction. Kotter's model was created based on research on why transformation efforts fail, and how to counter these common pitfalls (Kotter, 1995). In short, the model is concerned with creating a sense of urgency, forming a power coalition to lead the change, creating a strong vision, communicating it and empowering others to act on it, planning for short term wins and consolidating improvements, and institutionalizing the change.

Since Kotter (1995), a vast amount of change management models have surfaced, and several researchers are criticizing aspects of each other's models. For example, McLaren et al. (2023) strongly critiques Kotter's eight-step model, claiming that vilifying the current state, i.e., creating a sense of urgency, is completely pointless due to the inherent and unavoidable status quo bias. McLaren et al. (2023) state that change management helps organizations develop a plan to help their employees through change, allowing them to safely transition from the current to the future state. They go on to say that creating a sense of urgency, despite being popular among practitioners, has done little for employee well-being. Rather, organizational change still causes uncertainty and discomfort among employees, and ultimately negative stress and anxiety, which in turn increases levels of resistance. Consequently, McLaren et al. (2023) introduce quite strong critique to a well-established concept, while representing that employee well-being is receiving increasing attention in theory. However, Jacobsen & Thorsvik (2021) also considered the vast amount of proposed change models, and synthesized them to present nine suggested prerequisites to successful change:

1. A sense that change is necessary has been created.
2. The organization has the experience and capacity necessary to implement change, and available resources to conduct it.
3. The measures required to implement the change should be based on research, meaning that they are proven to work.
4. There is a clear vision of what they want to achieve, and a clear strategy for how the change will be implemented.

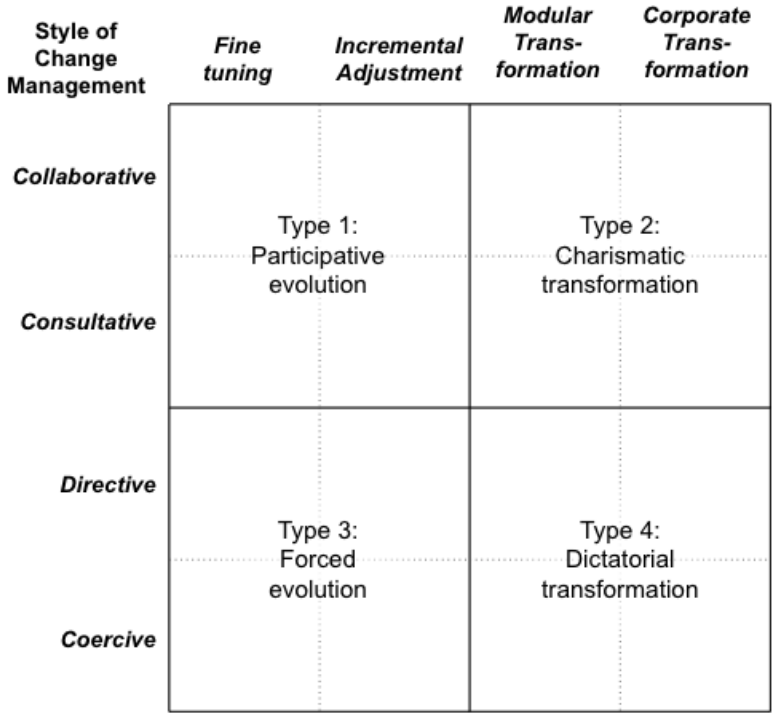
5. The process is characterized by procedural justice, meaning the change process leaves everyone affected feeling that they are heard and have the opportunity to affect the process.
6. The structural aspects inhibiting the necessary change are altered.
7. The change process allows experimenting and exploring so that different measures can be tested in some places before determining if it should be utilized for the entire organization.
8. Progress is closely monitored, realistic short-term goals are clearly defined, and there are criteria to identify improvements associated with the vision. Once achieved, progress is communicated throughout the organization.
9. Improvements are consolidated by institutionalizing positive change in new structures and processes.

While best practices for change management clearly is a debated topic, using a model developed as a summary of existing theory, such as Jacobsen & Thorsvik's (2021), is suitable to introduce some key points to the topic. Furthermore, related to employee well-being, Jacobsen & Thorsvik (2021) stated that organizational change is usually met with resistance, especially with continuous change, and defined several causes. Among the listed causes are fear of the unknown, breaking of a psychological contract, and loss of identity. Fear of the unknown resembles the feelings of uncertainty and anxiety mentioned by McLaren et al. (2023). Breaking of a psychological contract entails that change initiatives break the unwritten contract between individual and organization, including aspects such as the content of an individual's role (Jacobsen & Thorsvik, 2021). Loss of identity entails the feeling of pointlessness for an employee when the direction of the organization changes, such as 'has my hard work been for nothing?'

This study investigates the attractiveness of AquaNitor's proposed restructuring project, and data collection is largely focused on how more operational projects are conducted. Thus, two very different types of change are included in the study, which require different approaches. Dunphy & Stace (1993) also emphasized that what makes a suitable approach depends on the situation, and developed a model to help companies navigate amongst change management models and find one that achieves a maximum fit with the environment. Consequently, the Dunphy/Stace matrix, presented in Figure 2.1, considers two dimensions: the scale of change needed to fit the environment and the style of leadership required to implement the change (Dunphy & Stace, 1993). Together, these dimensions depict the style of change management in a certain change initiative, resulting in four types of change: participative evolution, charismatic transformation, forced evolution, and dictatorial transformation.

Participative evolution emphasizes the necessity of involving all employees in the development of the organization's direction, and thus in all change processes (Jacobsen & Thorsvik, 2021). Forced evolution entails small, subsequent steps of change, either individually or as part of a larger-scale change strategy, where management provides a clear plan and objectives and enforces the change through several, smaller steps. Charismatic transformation entails utilizing someone in the organization to communicate information and act as a role model for others. Such a person is sometimes referred to as a "change agent", which Lunenburg (2010) describes as someone who has the skill and power to stimulate, facilitate, and coordinate a change effort. According to Lunenburg (2010), change agents are necessary in all change initiatives, and the success of the change effort strongly depends on the quality and workability of the relationship between the change agents and the company's decision-makers. Lastly, dictatorial transformation entails conducting a strategic restructuring through a series of phases, which are developed and enforced by management with little to no alternative input (Jacobsen & Thorsvik, 2021). Therefore, it is sometimes referred to as top-down driven change.

Figure 2.1
The Dunphy/Stace Matrix



Note: Adapted from Dunphy & Stace (1993).

Consolidating the theory presented here on change management models, there are two main takeaways that are important to this study. First, while change management is a debated topic, there are some common denominators contributing to successful change. Seemingly, these are: to establish a clear vision for the future state, to base the actions taken on research, and to plan for how to involve all people affected by the change. Second, what approach is suitable to implement a change depends on the size and content of the change. Thus, various situations benefit differently from top-down or bottom-up steering, respectively.

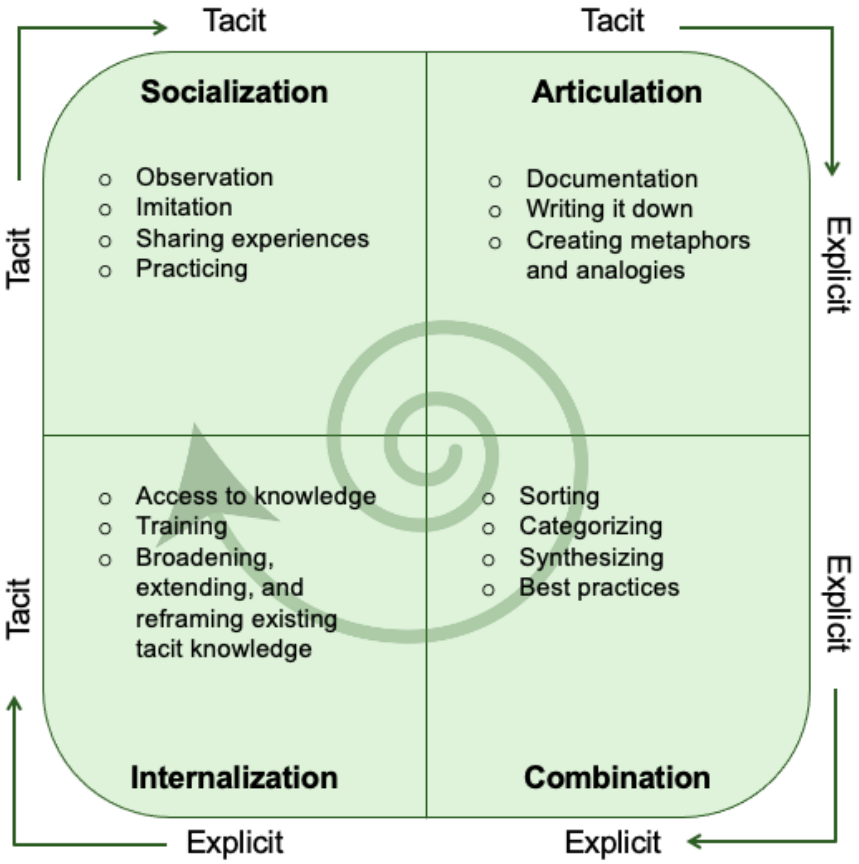
2.2 Knowledge Management

Knowledge management denotes the process of preserving and exploiting information within a company (Mårtensson, 2000). Moreover, organizations implementing systems and procedures for knowledge management are less dependent on the knowledge of certain individuals. Therefore, organizations may operate more efficiently through implementing appropriate knowledge management practices. While knowledge is inherently individual and tacit, and thus can be difficult to control, organizations are attempting to codify and store individuals' knowledge (Mårtensson, 2000). The process of codifying the knowledge of individuals is referred to as turning tacit knowledge into explicit, and thus making it organizational knowledge.

While theory on knowledge management consists of various models for creating knowledge, one popularly recited model, the Knowledge Spiral, is considered for this study. Nonaka & Takeuchi first introduced their Knowledge Spiral model in 1995, which detailed how tacit and explicit knowledge interact in what they called the knowledge-creating company. The model describes how there are different types of knowledge within companies, and how a company can articulate its employees' tacit

Figure 2.2

The Knowledge Spiral



Note: Adapted from Nonaka & Takeuchi (1995) and Nonaka (2007).

knowledge into explicit knowledge. Nonaka & Takeuchi (1995) describe how there are four types of knowledge sharing: tacit to tacit, explicit to explicit, explicit to tacit, and tacit to explicit. These four act in a spiral within the knowledge-creating company, moving to a higher knowledge level with each round (see Figure 2.2). Nonaka & Takeuchi (1995) describe the four movements through Socialization, Externalization, Combination, and Internalization. Socialization is to move from tacit to tacit through observation and shared experience. Externalization denotes a movement from tacit to explicit knowledge, through articulating one's ideas into explicit documentation. Nonaka revisited the Knowledge Spiral in a 2007 article, where he renamed this step to Articulation. Combination is to move from explicit to explicit, i.e. synthesizing existing documented knowledge to create new knowledge. Finally, internalization is described by Nonaka & Takeuchi (1995) as explicit knowledge becoming tacit knowledge through it being shared and incorporated into employees' own knowledge base.

The Knowledge Spiral is commonly referenced in more recent research. When Nonaka expanded on the concept in his 2007 article, he highlighted the importance of the articulation step in the Knowledge Spiral, and provided examples of how this has been done in successful Japanese manufacturing companies. Moreover, Nonaka (2007) discusses how knowledge creation is a dynamic process by three essential roles: senior management, middle management, and frontline employees. The latter have full insight into the day-to-day operations of the company and therefore possess knowledge of the intricate details which affect the manufacturing's efficiency. However, these frontline workers often have difficulties getting their voices heard (Nonaka, 2007). It is vital for the knowledge-creating company to allow the frontline employees to articulate and communicate their knowledge in order to grow its

organizational knowledge base. Furthermore, Nonaka (2007) states that all of the knowledge within an organization should be available to all employees, regardless of their role, to maximize the innovation and ideation on a tacit knowledge level. If there is limited explicit knowledge to draw upon, tacit knowledge creation is stifled. This closely relates to Moran & Brightman's (2000) notion of companies' need to draw upon their knowledge within different groups in the organization.

The existing theory on knowledge management cited here generates two main takeaways for this study: the importance of capturing tacit knowledge and creating explicit organizational knowledge, and that true knowledge creation cannot be entirely based on senior managers' tacit knowledge. As presented above, the Knowledge Spiral is a model containing four types of knowledge sharing, all contributing to the knowledge creation process. Another aspect affecting the overall knowledge management in organizations is the opportunities and barriers to knowledge sharing, as it helps depict the difficulty of knowledge creation. Riege (2005) defines 36 barriers to knowledge sharing, divided into three categories: individual barriers, technological barriers, and organizational barriers. Among the organizational barriers are:

1. Poor integration of the knowledge management strategy and sharing initiatives into the company's strategic approach and objectives.
2. Lack of leadership and managerial direction for communicating the benefits of practicing knowledge sharing.
3. Shortage of formal and informal forums for sharing, reflecting, and generating new, or existing, knowledge.
4. The retention of knowledge from highly skilled and experienced staff is a low priority.
5. Communication and knowledge flows are one-directional, meaning, for example, only top-down.

Disterer (2001) also discusses barriers to knowledge sharing, and lists a number of individual- and social barriers. Among the social barriers are "language" and "bureaucracy and hierarchy". Language does not necessarily entail different native languages, but can also entail the lack of a common way of speaking, in terms of, for example, analogies. Moreover, the barrier of bureaucracy and hierarchy entails that, generally, the more hierarchical the organization the larger the number of formal procedures, which prevent knowledge sharing. Consequently, there are a vast number of factors, seven of which are presented here, inherent to the culture and structure of a company that can inhibit efficient knowledge creation.

2.3 Supporting Theory

As previously mentioned, understanding the operating context of AquaNitor is essential to accurately answer the research questions of this study. To judge the fit of the restructuring project with AquaNitor's strategy, operations strategy is discussed in this section. Operations strategy was chosen over other types of strategy theory, such as corporate strategy, for its focus on operations, which closely aligns with the restructuring project's focus. To be able to generalize the study's findings over the CSW industry, Porter's Five Forces was chosen as an appropriate framework to describe the industry, as it is widely used in business research today.

2.3.1 Operations Strategy

In an attempt to summarize previous research on operations strategy, Slack & Lewis (2020) present four perspectives on operations strategy: top-down, bottom-up, inside-out, and outside-in. Together, the four perspectives can be utilized to create a comprehensive idea, and description, of an operations strategy (Slack & Lewis, 2020). While the top-down and bottom-up perspectives support in describing how a company's operations strategy is influenced by the corporate strategy and operational experience, respectively, the inside-out and outside-in perspectives are meant to provide a description of the operations strategy itself. The four perspectives on operations strategy, as presented by Slack & Lewis (2020), are illustrated in Figure 2.3 below.

The inside-out perspective on operations strategy is concerned with how the company exploits its internal capabilities in its chosen markets (Slack & Lewis, 2020). The capabilities are exploited through decisions in four decision areas: capacity strategy, supply network, process technology, and development and organization. Therefore, a company's operations strategy can be described from an inside-out perspective by considering how they make decisions regarding, for example, how to measure performance, capacity strategy, supply network strategy, and improvement strategy. Contrastingly, the outside-in perspective on operations strategy concerns grouping competitive aspects from market requirements and translating them into the five performance objectives: quality, speed, dependability, flexibility, and cost (Slack & Lewis, 2020). Moreover, through identifying so-called "order-winners", factors whose increased performance leads to improved business, can support the company in prioritizing among competitive factors. The top-down perspective on operations strategy is concerned with how the operations strategy reflects the company's overall strategy (Slack & Lewis, 2020). In short, the actions and decisions made at each level in the organization, thus also regarding operations strategy, should reflect the company's overall strategy and direction. Contrastingly, the bottom-up perspective on operations strategy is concerned with the degree to which the operations strategy is influenced by the operational lessons from day-to-day experience.

Figure 2.3
Operations Strategy Perspectives

Note: Adapted from Slack & Lewis (2020, p. 13).

To describe the connection between a company's operational resources and overall strategy, and the effect on the company's competitive ability, Hayes & Wheelwright (1984) developed a four-stage model of operations contribution, which is illustrated in Table 2.1. Slack & Lewis (2020) describes the four-stage model as a common approach to describe operations contribution. The model considers the operations capabilities based on two dimensions: its strategic impact and its contribution to strategy. In stage 1, operations capabilities are internally neutral, and the stage represents the lowest level of contribution of the operations function. The operations function is internally bound and rather than improving to retain or increase competitiveness, the operations are only improved as a mere reaction to problems. In stage 2, the company compares itself to industry competitors, and in stage 3, the company's operations has placed it among the best performers in the industry. The vision is to become the best in the industry, and the company attempts to clearly align its competitive or strategic objectives with suitable operations resources. Lastly, in stage 4, operations has a long-term focus, and the company is trying to develop the foundation for competitive success, trying to foresee changes in markets and supply to develop capabilities required to compete in future market conditions. Therefore, this model illustrates that the appropriateness of change strategies varies over the stages of operations contribution to strategy, which is applied in this study.

While operations strategy contains several decision areas, capacity strategy is the one which mainly correlates with AquaNitor's restructuring project. According to Slack & Lewis (2020), it is concerned with the configuration of capacity and facilities in general. Moreover, they describe capacity strategy decisions as fundamental to any company, and state that the risks of getting capacities wrong include having an inappropriate set of resources and mismanaging the process of changing the capacity. Capacity strategy concerns five main issues: number of sites, capacity of each site, long-term capacity change strategy, location of each site, and allocation of tasks to each site. Due to the characteristics of the restructuring project, number of sites, allocation of tasks, and long-term capacity change strategy will be the main focus for this study.

Table 2.1

The Four-Stage Model of Operations Contribution

Stage of Operations Contribution	Strategic Impact	Operations Contribution
Stage 1	Holding the organization back	Correcting the worst problems
Stage 2	As good as competitors	Adopting best practice
Stage 3	Clearly best in the industry	Linking strategy with operations
Stage 4	Redifining industry expectations	Giving an operations advantage

Note: Adapted from Hayes & Wheelwright (1984) and Slack & Lewis (2020).

When making decisions regarding expanding or decreasing the number of sites, the uncertainty of future demand plays a large part (Slack & Lewis, 2020). The company should consider the short- and long-term forecasted demand, and keep their market positioning strategy in mind when making capacity strategy decisions. Failing to invest in increased capacity to meet the likely levels of future demand due to uncertainties can lead to a loss of market shares that are never possible to regain. Conversely, Slack & Lewis (2020) state that investing in too much capacity can significantly damage the company's profitability. Consequently, the availability of capital is crucial to capacity strategy decisions; companies with more available capital can have a favorable market position, since they can risk expanding their capital for the possible benefit of gaining market share.

The decision regarding allocation of tasks entails to which degree sites perform a broad mix of tasks or are specialized (Slack & Lewis, 2020). Having specialized sites allows each site to clearly focus on its relevant performance objectives, be able to develop appropriate targeted resources, and achieve enhanced learning and improvement capabilities. Conversely, Slack & Lewis (2020) describe that having mixed sites allows operations to be less vulnerable to shifts in the market. Additionally, depending on which alternative of mixed- or focused sites enables processing larger volumes of components in one place, the task allocation decision can impact the company's ability to achieve economies of scale (Slack & Lewis, 2020).

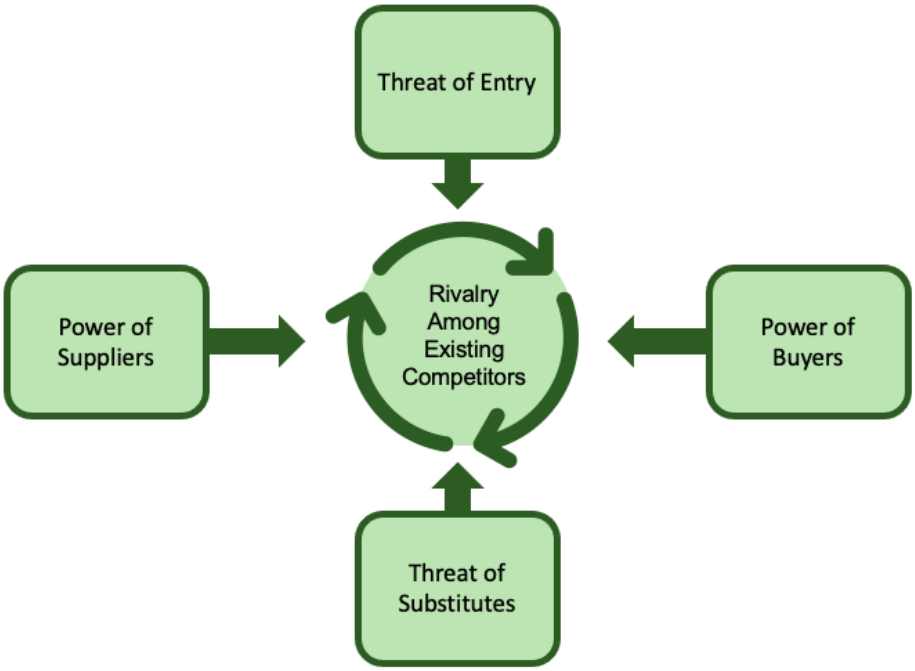
When changing the capacity levels, the first decision to make is when to implement the change (Slack & Lewis, 2020). As discussed above, the forecasted future demand has a large impact. There are three generic strategies for the timing of changing the capacity: capacity leads demand, capacity lags demand, and smoothing with inventories. While capacity leads demand entails timing the capacity change in a way that ensures there is always sufficient capacity to meet demand, capacity lags demand entails timing the capacity change so that the capacity is always lower or equal to the demand. Smoothing with inventories, however, entails ensuring constant satisfaction of demand through timing capacity changes in a way that makes the capacity plus inventory levels sufficient to meet demand.

2.3.2 Porter's Five Forces

Porter first introduced his framework for analyzing an industry's structure in his article "How competitive forces shape strategy" (1979). Since its introduction, Porter's Five Forces has been applied in a number of industries and is still commonly used in business research today (Dias et al., 2022; Wellner & Lakotta, 2020; Shi et al. 2021). The framework (see Figure 2.4) establishes five distinct forces which act on an industry to shape its structure of competition: Threat of Entry, Power of Suppliers, Power of Buyers, Threat of Substitutes, and Rivalry Among Existing Competitors (Porter, 2008). Basing an analysis on this framework helps a strategist understand the industry's structure and the overall competitive interaction within it. Porter (2008) argues that business strategists often define competition too narrowly, and developed his framework to expand on the nature of competition. The power of the forces affects the return on investment for the actors within an industry; if the forces are intense the return on investment is likely to be lower (Porter, 2008).

Firstly, Porter (2008) describes the force of Threat of Entry as referring to how easily new actors can become major competition. A few factors play into the intensity of this force, such as the barriers to market entry, and the expected retaliation of incumbents. Secondly, he describes the Power of Suppliers as how powerful the suppliers' bargaining power is. If this force is strong, a company's, and the industry's, costs are relatively high, which in turn acts negatively on the company's profitability.

Figure 2.4
Porter's Five Forces



Note: Adapted from Porter (2008)

Conversely, Porter (2008) describes the Power of Buyers as the buyers' bargaining power. This affects a company's price levels and thus their potential revenue streams and profitability. The fourth force he describes is that of the Threat of Substitutes. This is the one most difficult to define, as substitutes can vary between customer groups, and new ones can arise from technological advancements. To illustrate this difficulty of definition, Porter (2008) writes: "To someone searching for a Father's Day gift, neckties and power tools may be substitutes" (p. 84). The fifth and final force defined by Porter (2008) is the Rivalry Among Existing Competitors. Here, he states that rivalry has the most negative effect on profitability if the competition is based mostly on price, as lower prices generate lower revenues.

In this study, Porter's (2008) framework of the five forces is used to analyze the European CSW industry and to identify its structure, in which AquaNitor Group operates. The analysis guides the discussion and the conclusions drawn about the industry as a whole, as it describes the study's understanding of the industry.

3 Methods

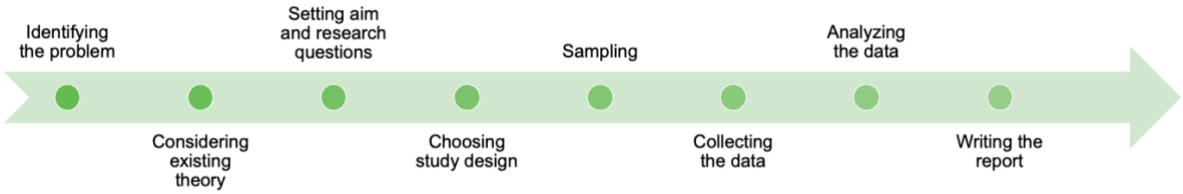
This chapter details the methods which were used in the study, as well as the research design and the research quality aspects. Finally, the ethical considerations of the study are discussed.

3.1 Research Design

The study has followed a qualitative research strategy, since this best suits the nature of the study's aim and objectives (Bell et al., 2019). The study also included a survey, which is inherently a quantitative data collection method, so it can be argued that the study followed a mixed methods research design. However, as a strong majority of the data collection was conducted using interviews, it was mainly qualitative. Furthermore, since the survey had a low response rate, as discussed below, it was only used to contrast the interview responses, and not to build whole arguments. Therefore, the research design was highly qualitative. By answering the research questions, the study has drawn conclusions about theory on centralization and knowledge management by applying it to a specific case in the CSW industry, i.e., the study has followed a case study design with a deductive approach (Bell et al., 2019). The research process is illustrated in Figure 3.1.

Figure 3.1

The Research Process



3.2 Data Collection

The study was initiated through a visit to one of the NE plants, with meetings with the thesis supervisor, i.e. the main contact person at AquaNitor, and the restructuring project manager. The plant visit provided the opportunity for general meet and greet with potential interview respondents as well as practical insights in the production processes. The meetings with AquaNitor representatives mostly focused on introducing the company as a whole and presenting the restructuring project specifications. The data collection was then performed using three research methods: construction of the theory chapter, interviews, and a survey.

3.2.1 Constructing the Theory Chapter

Reviewing existing literature is an integral part of research studies, since by reviewing and presenting previous research, the study's credibility is strengthened and the researchers can ensure that the study contributes to novel research (Bell at al., 2019). According to Bell et al. (2019), reviewing existing literature helps the researchers determine what is already known about their topic, what concepts and theories have been applied to it, and what potential controversies exist about the topic. While Bell et al. (2019) describe two main types of literature review, the systematic review and the narrative review, they also state that most importantly, literature should not just be summarized in a study. Rather, Bell et al. (2019) state that to contribute in the aforementioned way, researchers should carefully and critically assess which literature is relevant to include in their study.

For this study, previous research was revisited in the theory chapter of the report. Rather than strictly following the typology of the systematic- or narrative review, according to the definition of Bell et al. (2019), the construction of the theory chapter was focused on introducing the reader to the study's topic. To gather existing theory, academic texts, such as peer reviewed articles and books, were gathered from electronic resources. Primarily, the electronic resources Google Scholar, Chalmers Library, and Scopus were used. Thereafter, theory was included or excluded in the study based on its relevance to the topic, especially related to the findings of the study. Thus, the theory that either explained, confirmed, or contradicted the findings of the study were included in the study, thereby supporting the discussion. The justification for the research included in the theory chapter can be found in chapter 2, prior to introducing the theory. Consequently, all information gathered from literature, as described in this section, acts as a fundament for the discussion and conclusions drawn from the study, along with the other empirical findings.

3.2.2 Interviews

Due to the qualitative nature of the study, semi-structured interviews were conducted in order to gather empirical evidence to answer the research questions. Bell et al. (2019) state that semi-structured interviews are well-suited for qualitative studies due to the inherent ambiguity of this type of research. Bell et al. (2019) recommend the use of an interview guide, which lists the questions to be posed to the respondents, while allowing for spontaneous follow-up questions during the actual interview. All interviewees' identifiers and roles can be found in Table 3.1. Two interview guides were constructed; one concerning project management in AquaNitor (see Appendix A), and one on the topic of the CSW industry (see Appendix B). 13 interviews were conducted in total. Four of the interviews were on the topic of the overall industry, while the remaining nine interviews investigated topics more closely related to AquaNitor and its project management. Because the answers to the questions about the industry were the same, or similar, over all four interviews, the data was determined to be saturated and no more interviews were conducted on the topic. Additionally, one of the four respondents was Sven Karlsson, an external ceramics expert from the Research Institutes of Sweden (RISE). As his answers aligned well with those of the AquaNitor respondents, there seemed to be little bias among the respondents from the case company. Furthermore, AquaNitor provided data gathered by an external partner, which confirmed the information collected in the interviews, supporting the assumption on the data saturation. Lastly, a final structured interview was conducted with respondent L, the project manager currently responsible for the restructuring project, to confirm that the gathered information about AquaNitor and the project from the initial, untranscribed, meetings with company representatives was accurate.

All interviews were conducted via Microsoft Teams. Each respondent was asked for consent to record their interview, and each recording was transcribed to facilitate the data analysis. The interviews were conducted in October and November of 2023, and ranged from 40 to 60 minutes in length. The interviews were conducted in the order presented in Table 3.1, starting with respondent A and ending with respondent L. Karlsson's interview was conducted between the interviews with respondents E and F. The transcripts from the interviews with respondents A, B, C, D, E, H, and I, and Sven Karlsson, were translated into English, and the respondents gave their approval of the translated quotes' usage in the report. Additionally, Karlsson gave his approval to not be anonymous in the report to strengthen the credibility of his statements.

The sampling for the interviews was performed using both snowball sampling and stratified sampling. Bell et al. (2019) describe snowball sampling as initially sampling a small group of respondents, who in

Table 3.1

Identifiers, Topics, Roles, and Regions of All Respondents Who Participated in the Study

Identifier	Topic	Role	Region
A	Project Management	Project Manager	Northern Europe
B	Project Management	Project Manager	Northern Europe
C	Project Management	Project Manager	Northern Europe
D	Project Management	Project Manager	Northern Europe
E	Project Management	Project Manager	Northern Europe
F	Project Management	Process Manager	Central Europe
G	CSW Industry	Product Manager	Central Europe
H	CSW Industry	Managing Director	Northern Europe
I	CSW Industry	Managing Director	Northern Europe
J	Project Management	Project Engineer	Central Europe
K	Project Management	Project Engineer	Central Europe
L	AquaNitor Group	Project Manager	Central Europe
Sven Karlsson	CSW Industry	Ceramics Expert, RISE	Northern Europe

turn suggest the next respondents, and so on. Stratified sampling, on the other hand, is described by Bell et al. (2019) as specifically targeting samples based on their fit with the study's research questions. In this study, the thesis supervisor functioned as a base from which a stratified snowball sampling could be performed. When given characteristics of interest for the study, the supervisor suggested appropriate respondents who in turn recommended further respondents within their own area of expertise. The characteristics and areas of knowledge given to the thesis supervisor were chosen to ensure that the respondents' capabilities correlated to the research questions. Furthermore, respondents on different levels in the company were targeted to achieve a broader understanding of the subject area. For example, in investigating the barriers to implementing a large restructuring project, the topic of international coordination arose. Therefore, the study targeted respondents who had experience working with international projects.

3.2.3 Survey

As described in section 3.2.1, this study used stratified sampling to achieve a broader understanding of employees' experiences in AquaNitor. Therefore, a survey was distributed to the factory workers in the form of a web-based self-completion questionnaire using Google Forms. Bell et al. (2019) state that these types of questionnaires are appropriate when there is a large number of potential respondents, as it is much less time-consuming to distribute a questionnaire than to conduct interviews. Because the survey was created using Google Forms, the answers were automatically coded and visualized through pie charts, which facilitated the data analysis. However, a limitation of this type of data collection is that the respondents cannot be probed to elaborate on their answers (Bell et al., 2019). To minimize the effect of this limitation, the survey was constructed using as few open-ended questions as possible. The

questionnaire focused on the factory workers' experiences of large changes within AquaNitor. It included questions about how they felt during the changes, and how they would want future changes to be communicated to them. The full questionnaire can be found in Appendix C. In total, 160 factory workers were given the opportunity to respond to the survey, but only 21 responses were received. This amounts to a response rate of 13.1%.

Because the factory workers do not have company e-mail addresses, and AquaNitor's GDPR guidelines prevented direct contact with them, thus eliminating their anonymity through HR referrals, digital interviews could not be conducted with them. Furthermore, there were not enough resources, neither temporal nor monetary, to visit the plant a second time for in-person interviews. More importantly, if a second plant visit were feasible, the factory workers would not be able to pause their shifts to partake in an interview. The disadvantage of distributing a self-completion questionnaire is that the respondents could not be probed to elaborate on their answers. Since the survey was anonymous, potential quotes of write-in answers could not be checked and approved by the respondents. However, as these quotes were short and submitted in text they were likely not misinterpreted in the study. Another disadvantage of the survey was that production managers were asked to remind the workers of the survey to increase the response rate. This may have led the respondents to be under the impression that the survey came from management, instead of external researchers, which may have skewed the survey results. However, it was seen as more beneficial to collect the factory workers' opinions in this slightly disadvantageous manner than to not collect them at all.

To reach out to the factory workers without jeopardizing their anonymity, a note was written up containing information on the project, the survey, and about the researchers, as well as a link and a QR-code to the web-based questionnaire (see Appendix D). The note was then e-mailed to a HR representative at AquaNitor, who in turn placed copies of the note in the factory workers' break rooms at a plant in the Nordics. The survey could not be e-mailed directly to the workers as it went against the company's GDPR guidelines, and because of the reasons discussed above.

3.3 Data Analysis

This study followed a qualitative case study design. However, due to the data collection methods being both qualitative semi-structured interviews and a quantitative survey, the study had mixed research methods. Therefore, as outlined by Bell et al. (2019), the data gathered from the interviews and the survey, respectively, was analyzed differently.

For the interviews, data was analyzed using thematic analysis. According to Bell et al. (2019), thematic analysis is one of the most common approaches to analyzing qualitative data. However, the approach is not associated with strict tools and techniques. Rather, Bell et al. (2019) describe thematic analysis as entailing searching for themes in the qualitative data, while allowing the researchers to be flexible in their analytical strategy. Furthermore, defining the term "theme", Bell et al. (2019) state that a theme is a category identified in the researchers' data, which relates to the researchers' topic and research questions, builds on codes identified in interview transcripts. Ultimately, a theme should allow the researchers to theoretically understand their data, further enabling them to make a theoretical contribution related to their research topic.

For this study, different themes were formulated for the two types of interview topics: the European CSW industry and project management in AquaNitor. Thereafter, the data that correlated with a certain

theme was assigned to that category. For the European CSW industry, three themes were identified: industry characteristics, trends and opportunities, and factors inhibiting growth. These themes represent the subsections to section 4.1, presenting the findings about the industry. Similarly, three themes were identified for project management in AquaNitor: project process and documentation, knowledge sharing, and values. The first theme, project process and documentation, was assigned data related to respondents' descriptions or opinions about the way projects are conducted and knowledge is documented. The second theme, knowledge sharing, received data regarding respondents' statements about finding information within the company, onboarding and introduction to their role, and, to some extent, documentation practices. Lastly, the third theme, values, was assigned data regarding respondents' statements about the culture at AquaNitor, and equivalent. In contrast to the findings about the industry, the themes for project management are not presented in the results chapter. Instead, the data was categorized using the three themes, and thereafter, the categorization was used to identify reasons for, and barriers to, implementing the proposed restructuring project, thus answering RQ1 and RQ2, respectively. Therefore, the outcome of the thematic analysis for project management in AquaNitor is integrated to section 4.2 and 4.3, which present the findings related to these research questions. Furthermore, as described in the section about interviews above, some data gathered through untranscribed meetings was also relevant to RQ1, and therefore confirmed in a structured interview with respondent L. This data was not further thematized as it pertained to AquaNitor as a company rather than to the process of project management.

For analyzing quantitative data, Bell et al. (2019) state that the most important aspect is to consider how the data should be analyzed before the data is collected. As previously described, the choice to gather data using a survey to complement the interviews with project managers was based on the complications associated with interviewing frontline workers. Therefore, to effectively contrast the interview and survey data, the survey was constructed after the interview guides. Thus, it was assured that the data collected through the survey would concern the same topics as that collected through the interviews. After performing the thematic analysis on the interview data, each survey question was also assigned one of the themes for project management in AquaNitor. Thereafter, a version of the frequency tables method, described by Bell et al. (2019), was utilized to analyze the survey data. According to Bell et al. (2019), frequency tables can be used for all types of variables, and provide the number and percentage of respondents belonging to a certain category. For the survey in this study, each question was assigned the number and percentage of respondents answering each response alternative. Since the survey was constructed using Google Forms, this measure was performed automatically using this web-based service. Thereafter, based on the response alternative chosen by the largest share of respondents, the survey data was used to compare and contrast the data from the interviews.

3.4 Research Quality

Research quality in this study is understood solely by the definition by Bell et al. (2019). They present trustworthiness as a quality criterion for qualitative research, which includes four dimensions: credibility, transferability, dependability, and confirmability. Firstly, credibility is concerned with the study's internal validity, meaning how credible the findings are. This concerns whether or not the social context of the study is properly understood. In this study, this was ensured by checking the description of the social context used in the study with the thesis supervisor. Furthermore, if a quote was to be presented in the study's findings, it was double-checked with the respondent to receive their approval of the use of the quote and to ensure that the context of it was understood correctly. To further enhance the credibility of the study, the interview guides were sent out to the respondents at least one working day before the interview to allow the interviewee to prepare for the meeting. In this study, the survey had a

low response rate of 13.1%. The reasons for, and the implications of, the low response rate were discussed above. Because the collection of survey responses was suboptimal, a lacking credibility was mitigated in the study's findings and conclusions, by only being used to compare and contrast to the interview answers, to provide a different point of view from the interview respondents. Hence, no conclusions were based exclusively on survey responses.

The second dimension, transferability, is concerned with external validity, meaning to which degree the findings apply to other contexts (Bell et al., 2019). This poses an issue for this particular study, since transferability can be difficult to achieve in a qualitative case study. However, the study aimed to capture social aspects, and specifically investigate industry- and case company characteristics, to be able to generalize the findings over the CSW industry. Due to the limited existing literature on the CSW industry, other actors on the market were approached to participate in interviews, but no contact could be made. To capture unbiased industry specific data, one interview with Sven Karlsson, a ceramics expert at RISE, was conducted.

Dependability, the third dimension, is concerned with reliability, and thus how likely the findings are to apply at other times (Bell et al., 2019). To make the study as dependable as possible, interview templates and transcripts were kept, and the templates are presented in Appendices A and B. Additionally, the survey distributed to the factory workers is presented in Appendix C.

Lastly, confirmability is concerned with objectivity, or to which extent the researchers allow their values to intrude in the study (Bell et al., 2019). Although qualitative research is rarely fully objective, this study has not based any inclusion or exclusion of information on personal values. Therefore, while part of qualitative research entails interpreting words and finding latent content, all arguments presented in the study were built on published academic literature or information obtained from interviews, sometimes supported by survey responses. Furthermore, all answers to interview questions from respondents with the same position at AquaNitor were equally considered during the data analysis.

3.5 Ethical Considerations

Like with research quality, the ethical considerations of research are defined here as they are by Bell et al. (2019). They describe that there are four central ethical principles to consider in research studies: avoidance of harm, informed consent, privacy, and preventing deception. Firstly, avoidance of harm can include a number of aspects, and relevant for this study is to avoid inducing stress. Thus, this study has treated all participants with precaution, and anonymized all respondents. It is also important to avoid harm to AquaNitor. In this study, a unique restructuring project is described to be able to assess the feasibility of its implementation by AquaNitor. However, by doing so, competitors may gain inspiration to conduct a similar project themselves, thus diminishing AquaNitor's expected competitive advantage following successful implementation. To avoid harm to the company, this study does not include any project specifications such as expected profitability or who the new suppliers are, to limit the information available to competitors. Moreover, to ensure that these criteria were met the thesis supervisor was asked to review the report before its publication. Furthermore, the case company's wish to be anonymous was respected through referring to it by an alias, and disguising specific plant placements. Secondly, informed consent entails that all participants should be sufficiently informed about the study to make an informed decision regarding their participation (Bell et al., 2019). Therefore, all interview and survey respondents were as informed as possible before participating. Interview respondents were also given the opportunity to opt out of recording and transcription of their interviews.

Thirdly, privacy concerns the protection and respect of participants' privacy (Bell et al., 2019). This was considered through respecting participants' wishes to refrain from answering, or omitting answers to, any question. Lastly, preventing deception entails the importance of the study depicting information correctly, rather than as something it is not (Bell et al., 2019). This was ensured through close collaboration with the case company supervisor to ensure the information is correctly understood. Moreover, all quotes presented in the results were confirmed by the respondents before inclusion in the report.

4 Results

This chapter presents the result of the study, which entails the findings from the interviews and the survey. The chapter aims to build the empirical background on which RQ1 and RQ2 will be answered. To complete the answers, theory will be applied to the case study results in the discussion. The first section presents the study's understanding of the CSW industry, with regards to the three themes from the thematic analysis. The following two sections deal with RQ1 and RQ2, respectively. RQ1 by describing AquaNitor, the restructuring project, and expected benefits from successful implementation, and RQ2 by presenting the identified barriers from the interviews on project management. The three themes for project management from the thematic analysis are not presented in this section. Rather, the theme "values" is presented along with the other findings related to RQ1, while the themes "project process and documentation" and "knowledge sharing" are presented as barriers. Since RQ3 is more theoretical in nature, it will be answered in the discussion, based on the answers of RQ1 and RQ2.

4.1 The European CSW Industry

This section presents the results related to the European CSW industry, which was gathered through interviews. The information presented here will be inserted into the Porter's Five Forces framework in the discussion to further describe the CSW industry specifications.

4.1.1 Industry Characteristics

Several respondents stated that the CSW industry includes the production and sales of products such as WCs and WC seats, wash basins, urinals and bidés. Most respondents described the competitive situation in Europe as an oligopoly, despite there being a rather large number of actors active in the industry. Respondent G presented a market analysis performed by an external source, which portrayed that six actors are responsible for 55% of the European market, in terms of volume. The other 45% of the market is fragmented, and includes smaller actors and imports from other continents. Respondents G and I described that the industry sells both B2B and B2C, and the results from the industry-related interviews indicate that the industry can be divided into two main segments: new construction (project business) and renovation. The project business is B2B, and is the segment where the majority of sales lies, as each project requires large volumes. Two respondents attested that price is a very important factor in this segment, as customers are generally more interested in financially sound investments than high-quality products. As respondent G described it:

"In the project business they want to have a toilet that works and flushes, but maybe they don't see the difference on services or even on product quality, because for them it's just a price product, which is important at that stage."

In the renovation segment however, which is mainly B2C, price is less important, according to respondent G. In this segment, customers are generally more interested in appearance and function than price. Moreover, the customers of the B2C sales include brick-and-mortar retailers and e-commerce. In this segment, respondents G and I explained that the end-consumer is more involved in the choice of product. Therefore, products sold in this segment are more sensitive to trends than to price. For B2B, however, respondent I described customers as mainly consisting of wholesalers, installers, contractors, and architects. Over the years, there have been many acquisitions among wholesalers, resulting in wholesalers becoming larger and now covering multiple geographical markets.

Due to the oligopoly situation in the European market, market shares are quite static, according to Respondent H. Respondent G, H, and I explained that since the majority of sales are to the project business, the CSW industry is largely affected by the state of the construction industry. Most of the large actors focus on maintaining their market shares, as the market is rather saturated, according to respondent H. Essentially, the best way for actors to grow their market share organically is by continuously investing in their production network to increase its capacity, to be able to meet demand once the market rises after a period of lower demand. Thus, the actors with capacity to continuously invest in its production network are more likely to grow organically. Consequently, while it can seem contradictory to invest when sales are low and with uncertain forecasts for how it will develop, this is the most sound alternative. It was found that AquaNitor invests continuously in improving their operations, regardless of the current state of demand, which respondent H motivates by stating:

"[...] at the end of the story, the need for new buildings will be there. [...] So sooner or later it will come, and it's really up to us to be ready in the production network when it comes, to fulfill the market."

Respondents G, H and I agreed that while the European CSW industry is populated by a handful of large, influential actors, the industry is naturally subject to new actors continually trying to enter the market. Some actors try to gain market shares by targeting the B2C segment and tweaking their positioning, according to Respondent G, by focusing on design and targeting less price-sensitive segments. Sven Karlsson also discussed the entrance of new actors, and stated that this, or having a local installer vouch for the company's products, may be their best strategy. However, the actors choosing a niche are also competing with the others in the segment of more basic high-volume products, according to respondent G:

"But they are also somehow positioned like that. I mean, just a few of their products are like that, but at the end this is the market or the brand appearance that they have in the market."

4.1.2 Trends and Opportunities

In the interviews regarding the CSW industry, several trends were brought up by the respondents. The trends varied in character, from broader topics such as sustainability to more industry specific topics such as increasing product popularity.

On the topic of environmental sustainability, several respondents stated that it is of high importance within the industry. Because of the customer base's increasing demand for sustainable solutions, environmental sustainability also becomes more and more important to the companies within the CSW industry. Respondent H stated that environmental sustainability is a strong part of AquaNitor's company policy, but this new customer demand makes more actors increase their sustainability focus. The respondent illustrated this shift among competitors by saying:

"Now, if you go into the market and you're not doing anything for the environment, probably the customer is not interested at all."

The sustainability trend is of especially high importance in the B2B segment. For example, two respondents talked about how there will be certifications that products can receive, as a sign of their sustainable production. Respondent G also discussed how similar certifications already exist within the construction industry, and how contractors need to purchase certified products in order to receive their

own certifications on their buildings. Consequently, the demand to show facts and figures about what the products contain, where it is produced, and similar, is increasing. On the topic of the future certifications which CSW products may receive, respondent I said:

"I believe that all products will go through some type of sustainability evaluation, and all the larger contractors will probably, in the next 2-3 years, not choose products that aren't certified."

Respondent G and respondent I, together, illustrate how the importance of sustainable production is steadily growing. With certifications for CSW on the way, it is essential for CSW actors to modify their production in order to adhere to the specifications required by their customers. To produce CSW in a more environmentally friendly manner, several respondents mention that CSW manufacturers may reduce the water usage per flush in their WCs. Another factor is regulations on which chemicals are allowed in the production. Sven Karlsson, from RISE, mentioned that there have been several different glazes which have ceased production due to their banned chemical components. On the topic of regulations, respondent G said:

"[You may have] some changes in regulations, that one material can no longer be used for example in drinking water systems. So that means that then there's a huge project upcoming in replacing this product with something new."

This means that, to mitigate a loss of sales due to new regulations, CSW companies must anticipate coming changes and invest in R&D. If they do, they may be able to start their projects for new products and materials earlier, and thus receive their certifications as soon as they become relevant.

Due to the oligopoly market situation, it is often difficult for actors in the CSW industry to grow organically. Market shares are mostly static. Because of this, CSW companies opt for acquisitions of smaller actors to grow inorganically. This trend was mentioned by several respondents, who stressed that acquisitions are an efficient way to gain capabilities where the company is weaker. Respondent G said that this trend of acquisitions is stimulating another trend in the SW industry:

"The trend is more going to being a full bathroom supplier, so not only selling WCs, or only selling installation systems, but selling all the products you need for a bathroom."

This trend of the SW industry moving toward providing complete bathroom solutions was confirmed by respondent I, who also provided more context. Respondent I stated that a reason for moving in this direction is that it may be easier to gain market shares if the company also sells furniture for the bathroom, such as commodes and cabinets, saying:

"You look at the bathroom furniture, what cupboards you want, what the commode looks like, which faucet and mirror, and so on. And then the WC may come in the next step. The risk of not being good at bathroom furniture is that many of these suppliers also offer WCs."

What respondent I meant is that many customers choose their bathroom furniture before choosing a WC, and if the furniture supplier is also offering WCs, the customers will probably choose that supplier's toilet, even though it may be of inferior quality. Therefore, selling furniture for the bathroom may increase a company's market shares in the CSW segment, as they act as complementary products. If the

company provides everything needed for the bathroom, they may gain market shares in all included segments.

Lastly, respondents G, H, and I all state that there is a trend of moving towards wall-hung WCs, instead of floorstanding. This is a more slow-moving trend, as it is highly dependent on the way the buildings are constructed. It is not very common to switch from floorstanding to wall-hung in renovations, as it often requires more work in the piping. Moreover, all three respondents stated that this trend is significantly more prevalent in CE than in NE.

4.1.3 Factors Inhibiting Growth

During the industry-related interviews, respondents were asked about which limitations to growth they see in the market. All respondents discussed that the CSW industry is strongly related to the construction industry and therefore highly affected by the state of the economy. Since the majority of sales comes from the project business, the revenues steeply decline when projects are delayed or halted. Moreover, respondent H stated that the CSW industry recovers slower than other industries after a period of poor economic conditions, since both home renovations and building constructions require large investments. The industry's slow recovery pace indicates that the downs are longer in the CSW industry than other industries.

Respondent G and I stated that the consolidation of wholesalers is a threat, since it increases their purchasing power. As the wholesalers grow larger, it gets increasingly difficult for CSW companies to match their needs, while the CSW companies become increasingly dependent on each wholesaler. Consequently, due to the increased purchasing power of wholesalers, the consolidation is affecting the CSW companies' margins on their products. The margins are further pushed for public companies, since being public presents the company with an obligation to present its results. Wholesalers have, according to respondent G, lower margins than a producing company, since their main value-adding activity is service. Therefore, for public companies, the wholesalers' purchasing power increases further. Respondent G also stresses how the consolidation increases CSW companies' dependence on each wholesaler, stating:

"And there's always this pressure, especially for the big wholesalers that are relevant for us, that we need them. We can't just say 'okay, take any other product'. We need to cooperate with them."

The increased purchasing power also makes it more difficult for new actors to enter the market, according to respondent I. To have a good position with the wholesalers, the brand value carries a lot of weight, and the company has to be able to sell to lower margins. Respondent I stated:

"Of course [the wholesalers'] purchasing power is very strong. [...] But for other suppliers trying to get into these wholesalers, they have quite the struggle. They can't get into these wholesalers, so they have to choose another strategy, such as selling directly to installers or retailers, or equivalent."

On the topic of entrance of new actors, Sven Karlsson discussed that while the products in the CSW industry are often relatively cheap to produce, they are heavy and therefore expensive to transport. This reflection about freight costs indicates that it is difficult for a company to offer competitive prices if it is not geographically close to the local market of interest. Therefore, the barriers to entry in the CSW market are seemingly quite high, since the margins are declining. However, by being geographically close and thus lowering the freight costs, the barriers can perhaps be lowered.

Moreover, respondent G and I stated that a threat that they have seen for a longer period of time is the diminishing supply of installers. According to respondent G, this might be due to the attractiveness of installer as a profession declining. Consequently, the installers are facing problems in finding internships and educational roles, which in turn causes CSW products to be handled by less skilled professionals. Respondent G states that the lack of installers causes the CSW industry to lose sales, especially in the renovation segment:

"One threat we have, and have already had for many years in many countries, is a lack of installers. Often, the need for bathroom renovation was there, but the bottleneck is to find an installer that does the installation for you."

4.2 Description of AquaNitor and the Restructuring Project

Due to the nature and aim of the thesis, this study did not uncover process-specific data about neither the current nor the future state for AquaNitor. Rather, the desired findings regarding AquaNitor and the proposed restructuring project was data concerning the readiness of AquaNitor to implement the project. Thus, rather than viewing the restructuring project solely as an investment opportunity, this study uncovered data that enables conducting an analysis of AquaNitor's operations strategy and assessing its fit with the project. Therefore, the interview with respondent L uncovered data about AquaNitor's operations, as well as the background to, and content of, the restructuring project. This section presents the findings from the interview with respondent L, as well as complementary information that arose in other interviews.

AquaNitor is active in the SW industry and operates mainly in the European SW market, where it has established a position as one of the leading actors. The SW industry encompasses all components required within a bathroom, both inside and outside of the wall. Therefore, the production in the industry includes pipes for water supply and drainage, and metal structures for fastening, as well as the components visible to the consumer, such as WCs, wash basins, and bathroom furniture. As several other actors in the industry, AquaNitor produces complete solutions and thus produces all categories of components. Consequently, the company is divided into three business units: metal, plastic, and ceramics. Although the final product mainly comprises complete solutions, the business units are largely independent in terms of production- and logistics networks.

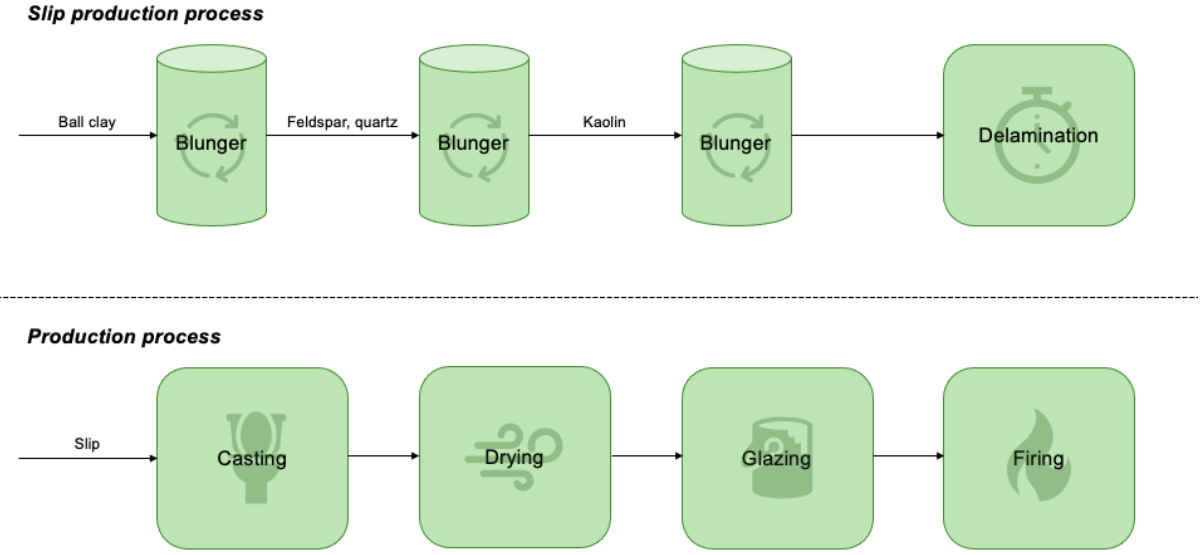
Several respondents unprompted spoke about the culture at AquaNitor. Respondents A through E, from the same NE plant, all described the culture at AquaNitor as very open, and especially stressed the importance of involving people affected by a project as early as possible to capture valuable knowledge and input. Respondent E specifically elaborated on their perception of the culture, stating that people generally are helpful and interested in knowing how projects or tasks are proceeding. Moreover, respondent H discussed AquaNitor's organizational structure, stating that it has a flat hierarchy. The respondent supported this claim by explaining their efforts to convey to the entire plant that it is never a matter of "us versus them", but that rather, the entire company is part of one team with the same objectives. Respondent I also discussed the culture and explained some specific values for AquaNitor, including integrity, team spirit, and dedication. Moreover, respondents F and K, from two different CE plants, supported the NE respondents' claims that AquaNitor has an open culture and a flat hierarchy. Describing their onboarding at AquaNitor, respondent F stated:

"I also learned how [AquaNitor] works, I mean, for me it was new that it doesn't matter whether I'm from the group or from a plant, we're all on the same level. We discuss together, we exchange opinions, we decide together how to move forward."

As stated in the introduction to the report, AquaNitor's ceramics production plants are organized in a decentralized manner. Consequently, the plants have completely separate ingoing logistics networks, and have implemented varying degrees of automation into their production process, according to respondent L. While respondent H described some differences between plants regarding production technology, respondent L stated that the main issue from the decentralized production system is that there are significant differences in the recipes for, and mixing process of, the slip. This is partly caused by the varying degree of automation in the process, but more importantly, by the plants producing different products. AquaNitor has a quite wide product assortment containing several product lines, according to respondent G, which are continuously updated, revised, and developed. Respondent L explained that the product lines are strategically distributed across the plants to best suit the demand of the plant's local region. Different products require different types and ratios of raw material, and consequently, there are a large number of different slip recipes being used in AquaNitor.

According to respondent L, there is significant variation between the production plants in terms of speed and quality of production, and the main contributor is believed to be the high variation in the slip production process. Ceramics production can, according to respondent L, be divided into two subsequent processes: slip production and production. Ceramic slip consists of soft and hard materials which are mixed together, blunged with water, and delaminated before being used in production. Thereafter, the products are created through a series of steps: casting, drying, glazing, and firing. This simplified version of the production process is depicted in Figure 4.1 below. While the hard materials (feldspar and quartz) affect the outcome of the firing process, respondent L explained that the quality and stability of the soft materials (ball clay and kaolin) are crucial to the quality of the output from the casting, drying, and glazing. Thus, the process of mixing soft materials, called slip preparation, is crucial to the overall production process. Moreover, respondent L explained that AquaNitor, as all other CSW companies,

Figure 4.1
Ceramics Production Process



purchases refined ball clays and kaolins from clay suppliers. The CSW companies, and the ceramics industry overall, represent a relatively small share of the suppliers' sales, compared to, for example, the brick and tile industry. Furthermore, the number of suppliers is limited, and the CSW companies have few alternatives. Therefore, the CSW companies have limited influence on price and product specifications for the soft materials.

Due to the production process's dependence on the output of the slip preparation process, the proposed restructuring project aims to achieve a more controlled and stable slip preparation process. As described in the background to this report, the project entails centralizing the slip preparation to one preparation plant, and thereafter supplying the production plants with slip ready-mix, instead of raw materials. Thereby, respondent L described that AquaNitor expects to improve their operations in four main areas, as depicted in Table 4.1. Firstly, the company expects to reduce waste in the production, due to minimizing the variation in the slip preparation process by conducting it in only one plant. However, since the plants are completely decentralized, they measure different aspects of production performance, and thus have different measurements of waste as well. Secondly, the restructuring would enable AquaNitor to purchase less refined raw materials, thus moving material refinement in-house. Consequently, the company expects to significantly reduce the material costs due to purchasing cheaper materials, utilizing economies of scale, and increased bargaining power toward suppliers since there are more companies supplying the new raw materials. Thirdly, while AquaNitor expects higher transportation costs from implementing the project, centralizing the slip preparation enables a more controlled logistics system than the current one, as well as the possibility of a lower CO2-footprint. Lastly, AquaNitor would gain an opportunity to improve the working conditions in the slip production. Currently, the workers in several production plants are subject to a dusty environment due to old infrastructure and manual mixing and handling. In the restructuring project, the company would improve the work environment and remove the dust by minimizing manual mixing and handling, and having enclosed storages.

Table 4.1
Changes Associated With the Restructuring Project and Expected Benefits

Change	Benefits
Slip preparation process conducted in one preparation plant	Waste reduction
Move refinement of raw materials in-house	Economies of scale Cheaper raw materials Bargaining power
Shared logistics network for all involved CER plants	Increased control over the logistics system Possibly lower CO2-footprint
New distribution of production steps across plants	Opportunity to review and improve the working condition

Due to the nature of the study, aspects such as the actual expected waste reduction, the availability of new suppliers and subsequent expected cost-reductions, the changes to the logistics network, and the actual improvements of working conditions were not further investigated in the interviews. However, the expected benefits outlined by respondent L are an important dimension to evaluating the attractiveness of the restructuring project, and will therefore be revisited in the discussion to be assessed based on the project's fit with AquaNitor's operations strategy.

Based on the information obtained from respondent L, the restructuring project includes three main categories of changes to AquaNitor's operations: the use of new input materials, a new distribution of production tasks across sites, and a new, standardized slip preparation process. Thus, implementing the restructuring project would not entail any changes to the distribution of product lines across production plants, or any changes to the production process subsequent to the slip production. Moreover, as respondent L mentioned, the project presents an opportunity for AquaNitor to review their current processes and make improvements in other areas than the actual production process. While respondent L was discussing the working environment, and the opportunity to reduce the dust, this way of thinking could be applied to other areas as well. From the interviews, two possible improvement areas arose, which AquaNitor could address in relation to the restructuring project: the lack of a structured project process and the lack of standardized documentation.

4.3 Barriers to Project Implementation

The two improvement areas could be bettered by the implementation of the restructuring project, but they may also be seen as barriers to its implementation. This section presents the four barriers to project implementation that this study identified: the lack of a structured project process, the unstandardized involvement of frontline workers, the lack of standardized documentation, and the unstandardized performance measurement.

Firstly, the lack of a structured project process was identified as a barrier based on the respondents' discussions regarding guidelines and processes for project management. In the interviews about project management with respondents from the NE plant, the current project processes were investigated, as well as how the respondents would like the process to be. Respondents A through E were all under the impression that there are no central guidelines within AquaNitor in NE for how projects should be conducted. Respondent A illustrated this, saying:

"I was a little surprised when I started here, to be honest, because it was quite free reign."

Respondent C reiterated:

"There isn't anything good today, so everyone does it sort of in their own way, and we want to move away from that. So it's a process under development."

Here, respondent C discussed how, due to the lack of central guidelines, all project managers conduct their projects however they see fit. They use their own project management experience to determine how to move forward, in an unstandardized manner. When that experience is lacking, it may affect the projects negatively. While they were not sure, some respondents in NE believed that there might be some guidelines from AquaNitor Group's headquarters in CE, but that they were not used in NE. However, in the CE plants, the respondents agreed that there are little to no guidelines on how to manage a project within AquaNitor, aside from the ones they created themselves. Respondent F said on this topic:

"[There were] no central guidelines, in this part of the company before. I don't know how it is in the other parts of the company, but there was nothing written down on this before I joined the team. [...] It doesn't mean that we didn't talk about that, or that we didn't take the lesson, and so on."

Respondent J stated that upon starting their role, there were no guidelines for project management. The respondent continued to share that they had developed their own process for organizing change. This process, as described by respondent J, contains four pillars which outline the project process from beginning to end. No other respondent seemed to know about respondent J's project framework. Respondent K, who works in the same plant as respondent J, stated that they still do not have any guidelines for how to conduct a project process.

In the current process, several NE respondents mention how guidelines for financial governance are clear. Respondent E said on the topic:

"I won't say that [central guidelines] don't exist; there is a project structure, a file structure, and financial monitoring of the projects. So some parts definitely exist. However, there are no defined gates."

Gates, here, refers to project milestones, which are typically defined and documented in product development projects. Several respondents discussed their previous work experience and how there were strict gates in the projects of other companies, which they deemed more efficient than the current process at AquaNitor.

The project managers at AquaNitor have realized that they need to structure and standardize their project processes in order to become more efficient and to enhance their knowledge management. Based on the survey of the NE frontline workers, they share the opinion that standardization is required. In the survey, 47.6% of the respondents had participated in several change initiatives, and were asked whether they had experienced differences in quality between the projects. 90% of the respondents answered yes to this question, and were therefore asked what the main reason for the varying quality was. 66.7% of the respondents answered "different project managers" to this question. One respondent added their own answer to the question, stating:

"The projects haven't learned from past mistakes, but make the same ones again in new projects."

The project managers have realized the need to standardize the project process, but because of their differing backgrounds, they do not always agree on what that standardization should look like. Therefore, AquaNitor has started a process at one plant in NE to create and document the future standard structure, which respondents A through E all mentioned in their interviews. Respondents A and B both said that a proper pre-study should always be conducted, with respondent B saying:

"We have set up X number of gates, and the most important thing we have agreed on is that we need a pre-study."

Respondent A expanded on this by describing the pre-study as a gate which should determine if a project is profitable, possible, and financially viable. Respondents A through E all mention gates as part of their

desired future process in NE. They want to establish several gates along the projects' duration, with structured and documented posts to be achieved at that gate. However, respondent B said:

"We don't have any type of gates or structures in that way here, so we need to start somewhere and then work our way forward. I think it would be too difficult and bureaucratic if we try to work from [a Stage-Gate] template, we need to change our way of thinking first."

What respondent B suggests here is that they have the "Stage-Gate model" as a target, but that they need to adapt it to fit their needs. They defined their perception of the "Stage-Gate model" as a project process with clearly defined milestones and gates, where each gate consists of a set of requirements for passing it. The new process is developed locally and specifically for the plant in NE, and respondent A explained that this is necessary. The main argument given for this necessity was that regulations and laws vary between countries, which can affect some steps in the process. However, respondent A stated that they aim to further investigate what exists in other parts of the group at a later stage, and later in the interview the respondent stated that this process has already started. Respondent A explained:

"We're currently working on checking how other plants do it, and also other departments within [AquaNitor]. I mean, we have production, development, et cetera. [...] So we're trying to look for information and compare a little. You don't have to reinvent the wheel if there's already something there."

Respondents F, J, and K in CE have also recognized the need for process standardization, and have taken on the task of formalizing a process. None of the respondents mentioned any collaboration with each other or anyone else for this task, except for respondent F, who had discussed the topic with their boss. Respondents F, J, and K described their thoughts on what the process should look like, and there were some clear differences. For example, respondent F indicated dividing the project process into clearer phases, by stating:

"This year, I made a goal with my bosses on what to focus on. I realize that it's good to have a standardization of the process - when it's started, when it's complete, where are the milestones, and so on."

Contrastingly, respondent K explained how they work with kick-off meetings, a joint Teams channel and SharePoint for updates and documents, and follow-up meetings on what the next steps are. When asked if this was their own way of working or a common practice, the respondent stated:

"In our team it is [common practice], because this is how we learned to do it. [...] I don't know if everyone does this, but I think in most cases, it is something like this."

When asked about whether someone checks if people comply with this supposed common practice, respondent K did not know how other teams work, but that there is typically no review of each team's compliance. Therefore, considering all respondents' answers, it is not clear whether or not this is actually a common practice. If it is supposed to be a shared process, it seems to be insufficiently regulated. In contrast respondent J stated that upon starting their role, there were no guidelines for project management, which prompted them to create their own process. They described their process as novel in the ceramics business unit, but insisted that it was similar to what exists in other parts of AquaNitor. The degree of implementation for respondent J's new process, however, was not clearly defined. Since

respondent K, who works in the same plant as respondent J, did not mention this new process, it does not seem to have spread throughout the ceramics organization. This goes back to what respondent A said about not reinventing the wheel: the project managers in NE could look to the processes developed by the CE respondents for inspiration on how to construct their new process. From the findings presented here, the first barrier to project implementation identified is: *the lack of a structured project process.*

The second barrier, the unstandardized involvement of frontline workers, was identified from the respondents' descriptions regarding how and when people affected by the change are involved in projects. As a result of the unstandardized project process, there are little to no guidelines on when and how to involve frontline factory workers. Respondents F, J, and K all stressed the importance of involving the people affected by a change early. On this topic, respondent F said:

"I inform the people before I start to think about what to change. I think that when I involve people to share the experience, then the implementation phase will be easier."

They illustrate here how the people affected by the change are vital to the outcome of a project. Furthermore, when asked when to include the affected workers, respondent K said:

"Directly! Not everybody, you have to filter a little bit, because you don't want to overload the wrong person."

Here, they state that it is important that you give the right information to the right person. Respondent K believes that only the people involved and affected by the changes need the information, in order to minimize stress and information overload in other workers. On the topic of involving the people affected by a change, respondent J said that they try to minimize pessimism and engage the workers in the change through a pilot project or "proof of concept" to show that it works. They went on to say:

"When this is seen inside the company, you don't have a push effect anymore, you create a pull effect, because then the people don't wait for you to come there and push, instead they say 'we want to have it'."

The strategy respondent J describes ensures the plants' workers' commitment to the change, as they get to drive the change forward instead of simply being told what to do. The "proof of concept" strategy is not found in the NE plant. Generally, the NE respondents believed that the people affected by a change, usually the factory workers, were open and compliant with the change initiatives. However, several respondents discussed the anxiety which may arise in the workers anticipating a large change. Respondent C said:

"There are always those who are anxious; over new technology, that new ways of working are more complex - there is always a push-back and a fear. It usually stems from the fact that they're worried that it will be too advanced, too much technology, too many robots, [...], etc. But it usually results in them accepting it and learning to use the new equipment."

They went on to say:

"We say that we have an 80/20 rule. If we can get 80% of those who will work with the change on our side, we have succeeded."

This means that usually, non-compliance and anxiety is most prevalent in the 20% of workers who are against a proposed change. Respondent C elaborated on how to handle anxiety in the workforce:

"Information. A lot of information. Talk, explain, tell, show, visualize, and also make sure that we have clear instructions, and clear manuals to facilitate their work."

In other words, the NE project managers prioritize information over the CE "proof of concept". However, respondent C's statement about information goes against what the survey of the factory workers said. In the survey's question 10 (see Appendix C) about whether the workers felt informed, in time, of coming changes to their work, 72.7% replied 3 or below, on a scale of 1 to 5. In the question, 1 was "I heard about the change the day it was implemented" and 5 was "I received all information related to the change in a timely manner". This suggests that even though the project managers think that they inform the people affected by their changes, it is still not enough to satisfy the confusion and anxiety amongst the factory workers. However, due to the low response rate of the survey, it may be that the 13.1% of workers who answered the survey have a strong correlation to the approximated 20% who often respond negatively to coming changes. This may be corroborated by other answers in the survey.

In the survey's question 11, respondents were asked to which degree they felt that they are currently given the opportunity to affect process changes. To this question, 90.9% replied 3 or below. Here, 1 was "I had no effect on the changes", and 5 was "I felt like I had the opportunity to affect the changes". When asked to which degree they *would like* to affect process changes, 95.2% replied with 3 and above, where 1 was "I don't want to affect the changes at all", and 5 was "I would like to give my input to every step of the process". The answers to these two questions suggest that the people who, in the past, have felt that they are not being listened to are prone to have more opinions on how the change initiatives should be conducted, and therefore may be more prone to answer a survey on the topic. This speaks to the correlation with the 20% who often respond negatively to change initiatives. Therefore, it may be that the 80% of workers, a clear majority, who are positive to changes do not necessarily feel overlooked or worried about coming changes to their work. Furthermore, respondent B stressed that it has become increasingly important to listen to people, since some people in the company have felt ignored previously. Therefore, to change their perception of how AquaNitor works, the respondent thinks that the project managers have to lead by example. Respondent B stated:

"Then, when you speak to a lot of people, they feel like [some departments] haven't listened. [...] Then they feel like it's a bit pointless - 'it doesn't matter anyway, why should I participate in this? You're going to do as you please anyway'."

Moreover, people finding their own way of including frontline workers seems to be the common practice. Respondent A stated that there is no system for collecting feedback or input from people in the organization that are not part of the project team. Respondent B explained that for each project, there is a kick-off meeting, to which people related to or affected by the project are invited. Thereafter, the next step is for the participants to speak to their colleagues. Thus, according to respondent B, the participants at the kick-off meeting become spokespeople for their colleagues. Respondent B continued to explain that each quarter or so, a list of all active or upcoming projects is posted both on the company's intranet and physically in the break rooms in the plant. For each project, the project manager and their contact information is posted, so that anyone can reach out with questions or concerns. Respondent A discussed how project managers could collect input from everyone in practice, stating:

"Nothing is impossible, but there are challenges with doing it. Also, we have a large number of projects, so it would be very time-consuming. Although that's no excuse, we would have received extremely valuable input."

This statement illustrates that the NE respondents are aware that frontline workers' opinions are useful, but that they believe that they do not have the resources to always involve them. The differing viewpoints between the regions as described here reveal the second barrier to AquaNitor's implementation of its restructuring project: *the unstandardized involvement of frontline workers*.

The third barrier to implementing the restructuring project, the lack of standardized documentation, was identified from the respondents' descriptions regarding how feedback is collected and documented, issues that arise in projects, and their onboarding experiences. This barrier relates to the improvement area referred to above as a lack of standardized documentation, which can be conceptualized by AquaNitor's collection of feedback at the end of a project. To learn how the project managers do this, the respondents were asked about the project review processes at AquaNitor. It was revealed that project reviews in NE are obligatory. Respondents A through E all said that, at the end of a project, a "lessons learned" meeting should be conducted with the project group. However, the respondents were not aligned on the utility of this meeting. The respondents described the aptly named meeting as a session for discussion of what was learned during the project. As respondent C described it:

"We conduct a so-called 'lessons learned' meeting, where we go through the whole project, its different phases. We look at what went well, what went poorly, what we can learn until next time. And yes, naturally we look through the risk analysis and make sure that we have accomplished everything that we've said we want to do there."

While respondent C's description may seem straight-forward, several respondents reveal that the structure of these compulsory meetings is highly dependent on the project manager conducting it. Despite this unregulated meeting structure, it seems like the "lessons learned" meetings facilitate the capturing of softer values, such as how the factory workers felt during the implementation of a project. Respondent E said that the "lessons learned" meeting is a large part of capturing those values. Furthermore, respondent A said about the meetings:

"I usually open up for everything. It could be anything from 'it went really well but it was too much to do', to that the project manager has made mistakes."

They also stressed the importance of project managers being "people persons", in order to know how to best receive the most accurate feedback from all project group participants. Conversely, when asked whether soft values are accounted for, one interviewee, respondent D, disagreed about the usefulness of the "lessons learned" meetings, saying:

"No, not from the project group's side. I guess it would be if the work environment group, EHS [Environment, Health and Safety], has anything. But we don't have any tools for that."

It is worth noting that respondent D is quite new in their role, but not receiving information about the function of the "lessons learned" meeting, further speaks to the issue of a lack of documentation on how

projects should be conducted. Subsequently, this lack of documentation causes issues in the knowledge sharing within AquaNitor.

When asked about how feedback on project outcomes is collected, the respondents in CE were restrictive in their answers. The answers also varied greatly between respondents, which limits the conclusions which can be drawn on this topic. Respondents F, J, and K collect feedback using different strategies, with varying frequencies, asking different people for their feedback. This shows that there is a lack of structure within AquaNitor in CE on how and when to collect feedback on projects, mirroring the lacking structure and standardization for general project process guidelines. Because of this, the reviews suffer from high variability in their utility. As part of the NE project of structuring the project processes, AquaNitor therefore wants to create a structure with which to conduct these feedback meetings. On this topic, respondent C said:

"It's the same thing there [as with the processes]; we are trying to define a good way of working."

A large part of this is also standardizing the manner and extent of documentation. Several respondents report that, because it varies so much between project managers, sometimes knowledge is lost when project managers quit or retire.

Another issue related to the lack of documentation is that of the project directives. Several respondents said that they sometimes receive this directive, containing goals and a budget, from management, or from the customer (usually production), but more often than not, they have to construct it themselves. Because they often do not have time or resources to create an accurate project directive, projects may result in something different from what the customer originally requested. This is why they need a structured pre-study: to ensure alignment with the project's target, and to budget more accurately. Respondents B and E explained that this affects the quality of the project output. Currently, without a pre-study, they stated that while the project manager and the customer requesting the project often feel that they are aligned, they realize at the end that they were, in fact, not. Respondent E exemplified this issue by stating:

"As long as you haven't agreed on something and documented it, you risk ending up in a situation where I deliver something that I think is correct, and yet they receive something they think is wrong."

While some project managers enjoy the freedom to choose their own way of working regarding documentation, some respondents stated that this has resulted in a suboptimal management of knowledge. Respondent E explained their experience of the situation by stating:

"I appreciate the freedom, but I think it can be sensitive for new people starting at the company. Or rather, if you lose old project managers there are no, or very little, process descriptions to lean back on. That can be a lot to deal with when you're new."

However, when asked whether there is simply not that much documented information to share, respondent E continued:

"Yes, there is, but there is no steering of it."

Further exemplifying the barrier of unstandardized documentation is the process of onboarding at AquaNitor, as respondent E discussed above. Respondents B, C, and D stated that they received an education in project management when they first started in their role. While respondents C and D expressed that the education provided them with valuable insight, all three respondents agree that there was no internal onboarding about how projects are managed at AquaNitor. The three respondents agree that there was no specific introductory information, neither oral nor written, regarding project management principles at the company. Respondent E explained that for onboarding, they mainly received an introduction to AquaNitor's documentation system, such as which folders that existed or where to obtain or leave information. However, respondent E added that they feel that people at AquaNitor are very helpful and open to help with any questions or tasks. Overall, it seems that there was little to no onboarding adapted for AquaNitor specifically. When asked about their onboarding experience, respondent B stated:

"*I would say that at companies I have worked at previously there has been a very clear plan. That doesn't exist here."*

When asked about whether they felt prepared to manage projects after the onboarding and external education, respondent C stated:

"No. Well, I guess that's always the case when you start something new. You can read infinite amounts but when you enter the situation it's completely different, not the way it is on paper. But, of course, it's been beneficial to have received the preparation. Then, everyone has to find their own way of doing things and of being a leader, and that can vary."

This statement from respondent C further confirms the high dependence on individual project managers in a project's quality. This seems to be a result of the unstructured onboarding process and the unstandardized project process.

When the CE respondents were asked about their onboarding experience, respondent J and K both stated that they immediately began working on projects. Respondent K described this experience as good, and that they received training in parallel on topics such as how to organize a project and what the important parts of a project are. Additionally, respondent K explained that there is a platform on AquaNitor's intranet which contains a vast number of courses on various topics. According to the respondent, the platform is accessible to anyone in the company. However, not all courses are accessible to everyone, since some topics might contain information that is only intended for certain parts of the company. Respondent K said about the courses:

"They're really practical, many topics you can easily do yourself."

However, no other respondent mentioned the resources on the intranet, suggesting that its existence is not heavily communicated. Respondent J chuckled at the question about their onboarding, and stated:

"That was funny! My onboarding was, well, it was really nice, it was, let's say, a jump directly into the cold water. It was directly from 0 to 100."

However, respondent J continued to explain that the lack of onboarding suited them well, since they had a very similar role at their previous employment. When asked again if there was any onboarding or

training specific to AquaNitor, twice, respondent J explained that they felt they already had the necessary skills, and that the only onboarding they received was to follow along in projects right from the start. Respondent F did not mention a training platform either. When asked about their onboarding, the respondent explained that there happened to be a scheduled group event at the time they started their position. Therefore, respondent F participated in workshops regarding topics such as how to lead and support the plants throughout projects. While the workshops were not specifically referred to as onboarding, the respondent explained that they have suggested to their manager that the workshops should be common practice for new employees. Thus, taking respondents F, J, and K's responses into account, the training platform seems to be either poorly communicated throughout the organization, or completely voluntary. Consequently, the lessons from the inadequate review processes, the lack of project directives, and the insufficient onboarding together comprise the third barrier: *the lack of standardized documentation*.

The final barrier identified is related to the issue of poor documentation processes within AquaNitor. As described in section 4.2, different plants measure different aspects of production performance. This may be because they are completely decentralized, but it could also stem from AquaNitor's lack of standardized documentation. If the plants measure different aspects, it may be difficult for them to accurately compare plants to each other and find solutions to common issues over several plants. Thus, the fourth barrier is: *the unstandardized performance measurement*.

Based on these results, there are some striking similarities between the NE and the CE plants. There seems to be little to no standardization and documentation of project processes. Several respondents, mainly from the NE plant but also from the CE plants, attested to the fact that project managers are vastly free to choose their way of working and how to document their process. Moreover, almost all respondents mention that in one way or another, they are involved in defining a new project process. All respondents in the NE plant, and at least two respondents from CE, seem to aim for some sort of "Stage-Gate" process, by implementing phases and milestones or gates. While some respondents from the NE plant specifically discussed the need for a locally adapted process, these findings raise the question of whether it would be more efficient for AquaNitor to define a project process centrally to achieve a common way of working.

In the NE plant, all respondents spoke about the same project process being under development, indicating that they are quite aligned within the plant regarding what the project process should contain and what it is currently lacking. For the CE plants, however, the process descriptions varied both between the respondents from the same plant, and compared to the respondent from another CE plant. Consequently, while several respondents both from the NE and CE plants spoke about the open, flat, and transparent culture at AquaNitor, there seems to be insufficient knowledge sharing between plants. The issue of an experienced lack of steering of knowledge and information was explicitly discussed by respondents from the NE plant, but not by the respondents from the CE plants. However, based on the results from the interviews, the same issue seems to apply to the CE plants, due to the large variation in the responses given. Based on all interviews, both with respondents from the NE and CE plants, the onboarding process seems to be quite short, and rather be driven by the concept of trial and error. Consequently, the lack of knowledge and information steering could become a problem if the employee turnover would be higher. Moreover, it amplifies the inclination of project managers conducting projects in their own way. The results from the interviews about project management in AquaNitor can be summarized to four distinct barriers to implementation of the restructuring project:

- The lack of a structured project process
- The unstandardized involvement of frontline workers
- The lack of standardized documentation
- The unstandardized performance measurement

5 Discussion

This chapter presents the discussion of the findings of the study in relation to the theory presented in chapter 2. After describing the European CSW industry using Porter's Five Forces, the study's research questions are further investigated. First, the findings related to RQ1 and RQ2 are used to analyze AquaNitor's operations strategy and thereafter discuss the reasons for, and barriers to, implementing the restructuring project. Thereafter, the conclusions from RQ1 and RQ2 are used to formulate takeaways from AquaNitor. By applying the takeaways to existing theory, recommendations for increasing employee well-being in large manufacturing companies are defined. Due to the high-level nature of the recommendations, they are considered as suitable starting points for manufacturing companies with similar operating contexts and characteristics as AquaNitor.

5.1 Description of the CSW Industry Using Porter's Five Force Model

In order to generalize the identified barriers over the European CSW industry, there first needs to be industry specifications to relate to. In this section, the industry is analyzed using Porter's Five Forces, as introduced by Porter (1979). Each force is discussed primarily with the results regarding the European CSW industry as a base and assigned a level of intensity. Presenting the industry specifications is also relevant to comprehend the context in which AquaNitor operates, as it is understood in this study, and where the recommendations of this study are most applicable.

5.1.1 Threat of Entry: Medium-Low

The force of Threat of Entry is deemed to be medium-low. In the interviews, the European CSW industry was described as resembling a type of oligopoly situation, where AquaNitor is one of the larger actors. This may hinder new actors from entering the market, since most of the market shares are occupied by large companies. Thus, the consolidation of the market is one of the factors contributing to the European CSW industry's high barriers to entry. Another barrier to entry is related to the large investments needed to compete on the market. Since the main customers in the CSW industry are large wholesalers and construction of buildings, new entrants must be able to supply large volumes quickly. To do so, they need to invest heavily in building or otherwise acquiring production plants capable of producing the required volumes. Furthermore, to be able to compete on price with the existing large actors, they need to achieve economies of scale. If they cannot compete on price, it may be difficult for the new entrants to be attractive to the wholesalers. If the wholesalers will not supply the entrants' products, they will fail to capture large parts of the possible sales volumes, and thus not be profitable enough to survive in the highly competitive market.

Government regulations may also be a barrier to entry. In CSW production, there are regulations on which chemicals are allowed. While actors entering the CSW market likely are aware of these regulations, they may pose a threat for new entrants if the knowledge of how to produce their products without those chemicals is not readily available to them. Furthermore the coming environmental certifications may cause the initial investments of the new entrants to rise even higher. Moreover, the trend of moving toward complete solutions in the SW industry may prove difficult for new entrants, who need to learn several different capabilities due to the differing needs of each segment of the complete solutions. If they focus only on CSW, they may easily be outcompeted by larger actors, but perfecting several different capabilities at once would presumably be challenging for a new actor. It may be easier

for them to focus on markets where the competition is not as intense. For example, bathroom furniture may allow for market entry with lower barriers, as competition is generally less intense here. Additionally, as stated by respondent I, achieving a good standard in this segment may allow new entrants to gain access to the CSW industry. If they, when they have established themselves in the furniture segment, should choose to start producing CSW, customers may choose their products because it is convenient, regardless of whether the quality lives up to that of their larger CSW competitors. As respondent G discussed, this is a real possibility for entering the market, since it is in those cases not a large enough visible difference for the under-informed customer to choose the more expensive, higher quality products.

Finally, two ways of lowering the barriers to entry are by entering the CSW market with a niche or choosing to operate in a specific local area. Firstly, new entrants may pose a threat to the CSW industry if they enter the market with a new niche. If they manage to enter the market with low prices, for example if a large bathroom furniture actor decides to also produce cheap WCs, they may gain substantial market shares quite quickly. Furthermore, new entrants may choose design as their niche. In the CSW market today, there is not much differentiation between actors' product designs. Therefore, if a new entrant focuses their products toward fashionable designs, they may take market shares from the more conventional designs of the larger actors. Secondly, the CSW industry faces the greatest threat of new entrants in their customers' local area. As Sven Karlsson stated, the products in the CSW industry are heavy and cumbersome to transport. This leads to substantial freight costs if a CSW manufacturer is geographically too far from their customers. If a new entrant is geographically closer than their larger, more established competitors, they will see cheaper freight costs and therefore take a lower price. Furthermore, as described in the interviews, many of the trends in the market are closely related to geography as well. For this reason, new entrants operating in a limited geographical area may be better suited to comply with the trends of that area. Where these same trends may pose a threat of complexity with the larger actors, they may be an opportunity for new entrants to gain local market shares.

Because of the rather high barriers to entry the threat of new entrants is quite low in the CSW industry. However, due to the possibility of new entrants entering through other segments, or niching their products and operations on price, design, or geography, the overall intensity of the power of threat of new entrants is medium-low.

5.1.2 Power of Buyers: High

The force of the Power of Buyers in the CSW industry is deemed to be high. As apparent from the results, the consolidation of wholesalers is a significant threat to the CSW industry. When the customers grow larger, their bargaining power grows with them. Therefore, the companies in the CSW industry are pressured to lower their prices, giving them smaller margins and diminishing their profitability. When CSW products are bought for construction of buildings, the buyers also possess significant power as they purchase large volumes. When there is substantial new construction, there are several large purchase orders, sometimes by the same actors, which further grows the buyers' power. Moreover, if a CSW company is public, they are required to publish quarterly reports, thus "showing their hand" before negotiations might begin.

The design segment of the CSW industry sees a lower power of buyers, as their volumes are lower and their customers are less price sensitive. Mostly due to the consolidation of wholesalers, and the large volumes associated with the CSW industry, the overall power of buyers is high.

5.1.3 Power of Suppliers: High

The force of the Power of Suppliers in the CSW industry is deemed to be high. In this case, this force refers to the power of the suppliers of the main raw materials utilized for CSW production: ball clay, kaolin, feldspar and quartz. Because these are all finite resources, originating from a limited number of mines, the companies supplying them hold the power over which actors gain access to them. For ball clay and kaolin, the CSW industry is rarely prioritized by the suppliers, since they buy much smaller volumes than their other customers. The suppliers focus instead on the industry which provides them with the majority of their revenues, the brick and tile industry. The CSW industry, and the ceramics industry overall, are a small part of the suppliers' customers, and they do not have any significant bargaining power against them. There are relatively few suppliers of the refined clays, as described by respondent L, but quite many buyers. The power of suppliers of the hard materials of ceramics products is not as intense, as feldspar and quartz are more abundant in nature. Overall, the power of suppliers in the CSW industry is high.

5.1.4 Threat of Substitutes: Low

The force of Threat of Substitutes in the CSW industry is deemed to be low. The main material for wash basins in bathrooms is ceramics. Sometimes they can be made from other materials, such as stainless steel, but it is not common in bathrooms. Washing your hands and face in the bathroom is common practice today, especially since the COVID-19 pandemic, and there are not any relevant substitutions for the wash basin. The same goes for the WC, which is a product needed by everyone, every day. In vacation houses in rural locations, a substitute may be outhouses. For large events such as concerts and festivals, a substitute may be portable toilets. However, for the everyday person, and thus the majority of the possible sales volumes in the market, there is no suitable substitute for a WC in Europe. Overall, the threat of substitutes is low.

5.1.5 Rivalry Among Existing Competitors: Medium-High

The force of the Rivalry Among Existing Competitors in the CSW industry is deemed to be medium-high. From the results, it is apparent that the competitive situation in the market resembles an oligopoly, where a few large established companies account for more than half of the sold volumes. Therefore, to a certain degree, companies struggle to grow their market shares organically, and rather aim to retain their current shares and grow linearly to the increasing demand. Consequently, this indicates that the rivalry among existing competitors in the CSW industry is high. However, the other half of the market, accounting for about 45% of volume, is quite fragmented, as stated by respondent G. From the interviews, it was also apparent that new companies periodically enter the market, either introducing a lower price or some sort of unique design or function, and gain some market share. Therefore, it can be argued that the force of Rivalry Among Existing Competitors is not as strong as the situation for the actors that are part of the oligopoly suggests.

Another aspect indicating that the rivalry among existing competitors is high, is the fact that companies in the industry are, largely, adopting the same trends. From the results, this seems to be the case both for the trend of producing complete solutions and that of gaining market share by producing bathroom furniture to get brand recognition. This suggests that many companies in the CSW industry have similar business models, and strategies to gain competitive advantage, which increases the level of rivalry. Furthermore, price and sustainability can be considered order-winners for the industry as a whole. Order-winners, as defined by Slack & Lewis (2020), are factors that directly lead to improved business. From the results, it is apparent that the competition is strong regarding both price and sustainability, as many

companies are focusing on improving in these areas. As confirmed by respondent G, price is an especially competitive factor, as several new competitors gain market share by offering lower prices. Therefore, establishing contracts with customers for new contracts and maintaining a good reputation among installers is presumably a vital factor to remain competitive. Additionally, increasingly adding services to the product offering could provide a company with a competitive edge, to reduce the risk of being outcompeted by an actor offering lower prices.

In the CSW industry, most companies in the industry are competing in the same segments, and adopting the same trends. While more than half of the market is accounted for by a few large companies, the remaining market shares are more fragmented. Overall, the rivalry among existing competitors is medium-high.

5.2 Evaluation of the Restructuring Project's Attractiveness

This section aims to draw conclusions regarding RQ1 and RQ2, by complementing the results with the theory cited in chapter 2 as well as the industry specifications. First, AquaNitor's operation strategy is analyzed, by applying Slack & Lewis's (2020) theory about operations strategy to the results about the company and its restructuring project. To answer RQ1, the project's fit with the understanding of AquaNitor's operations strategy is discussed to find reasons for implementation. Thereafter, the barriers to implementation of the proposed restructuring project are revisited and discussed, and the attractiveness of the project is evaluated. Lastly, the industry specifications above are applied to discuss the generalizability of the identified barriers to the European CSW industry.

5.2.1 Description of AquaNitor's Operations Strategy

According to Slack & Lewis (2020), an operations strategy can be described using an inside-out and an outside-in perspective. Applying an inside-out perspective to AquaNitor's operations strategy, two decisions were most prominent from the results: the choice between mixed or focused sites and the long-term capacity expansion strategy. Regarding the choice between having focused or mixed sites, the results indicate that AquaNitor prefers having focused sites. While most production plants produce several products or product lines, the product lines are strategically distributed over the plants to best suit the demand in the plant's local region. Moreover, regarding capacity expansion, AquaNitor seemingly aims for a capacity leads demand strategy, as defined by Slack & Lewis (2020), according to Respondent H's descriptions. The results revealed that AquaNitor continuously invests in capabilities and capacity, regardless of the current level of sales. This seems to be a consequence of considering the CSW market as evergrowing; that although the industry, as all industries, faces worse times, the demand for CSW products never ceases to exist. Due to the strong correlation to the construction industry, the result indicates that the demand can only be expected to grow larger in the future. Moreover, as uncovered by the results, being ready to meet demand as it increases is a good way to grow in the consolidated European CSW industry. Therefore, adopting a capacity leads demand strategy seems suitable.

An outside-in perspective on operations strategy is concerned with grouping competitive factors and translating them into the five performance objectives: quality, speed, dependability, flexibility, and cost (Slack & Lewis, 2020). Despite having large-scale production, AquaNitor has quite a wide product assortment, with several product lines, which are continuously updated, revised, and developed, as explained by respondent G. It is clear from the results that quality is a key performance objective to AquaNitor, both in terms of ensuring high product quality and working continuously on becoming

increasingly sustainable. While information regarding price levels of AquaNitor's, and its competitors', products is not treated in this study, it seems that AquaNitor aims to continuously improve the operations to provide its customers fair prices, based on the results. Therefore, the performance objective cost seems to be of importance to the company, as well. Emphasizing the quality and cost performance objectives seems suitable for a company with AquaNitor's characteristics, considering that price and sustainability are the two order-winners in the European CSW industry.

The top-down and bottom-up perspectives on operations strategy considers how the company develops the strategy (Slack & Lewis, 2020). The top-down perspective considers to which degree the operations strategy, and overall operations, is influenced by the corporate strategy. While this study did not consider AquaNitor's corporate strategy, the results regarding barriers to implementing the restructuring project indicate that projects on plant level lack top-down steering. This remark is based on the fact that plants seemingly develop their project processes completely independently, with little to no guidelines from the group level. Consequently, based on the results, the improvement and steering of operations varies greatly between plants. The results indicate that in contrast to smaller, plant level projects, the larger-scale improvement projects are driven in a top-down manner.

The bottom-up perspective considers the degree to which the operations strategy is influenced by operational lessons (Slack & Lewis, 2020). From the results, it seems that most plants try to involve frontline factory workers, and otherwise operational personnel, as much and as early as possible in projects. The results uncovered that in the NE plant, projects are often ordered from production, which indicates a bottom-up improvement process, according to the description by Slack & Lewis (2020). However, due to the lack of top-down implemented guidelines, it is difficult to determine whether the bottom-up development process identified in the NE plant applies throughout the group. Although, based on the result from CE project managers, it seems that for the CE plants, while operational workers are involved, projects are initiated in a more top-down manner.

5.2.2 The Restructuring Project's Fit With Strategy and Impact of Barriers

Considering AquaNitor's level of operational performance, using the four-stage model presented in Table 2.1, the company seems to be located around stage 3. As described by Slack & Lewis (2020), companies at this level of operations performance are among the best in the industry, and seem to have the vision of becoming the best by clearly aligning strategic objectives with suitable operations resources. As presented in the results, AquaNitor continuously invests in its operations, and projects are initiated both with market requirements and operational improvement areas in mind. While this study has not included an exhaustive analysis of AquaNitor's operational resources and capabilities, the results indicate that it is on the forefront of the industry. Furthermore, AquaNitor seems to aim to be as high as possible on the four-stage model presented by Slack & Lewis (2020). Since the centralization of the slip preparation is expected to increase process control and overall production quality, the restructuring project would increase the strength and stability of AquaNitor's operational capabilities. Therefore, the restructuring project could improve the company's operations' position in relation to competitors in the industry. Consequently, conducting the restructuring project could make AquaNitor gain significant competitive advantage, which is especially important in the European CSW industry, where the rivalry of existing competitors is higher. Thus, a first reason for AquaNitor to implement the proposed restructuring project can be formulated:

1. The restructuring project could improve AquaNitor's operations' position in relation to competitors in the industry, thus strengthening the company's competitive advantage.

Since the restructuring project would entail conducting the slip preparation in one preparation plant, instead of locally in each preparation plant, it entails a change in AquaNitor's capacity strategy, according to the information from Slack & Lewis (2020). While investing in the restructuring project entails increasing the total number of sites, it also entails further increasing the specialization at each site. According to Slack & Lewis (2020), this can be a risk, since having focused sites increases each site's vulnerability to shifts in the market. While there naturally is a risk that the project would be less profitable if the demand for AquaNitor's products decreases, this risk can be considered quite low. This is based on the results regarding industry characteristics, where respondents described that over time, the demand for CSW products is relatively steadily increasing. Furthermore, Slack & Lewis' (2020) discussion on the impact on vulnerability could be considered less relevant in AquaNitor's case. Since the restructuring project only aims to centralize the slip production, the actual distribution of products across sites does not change. Based on the impact on the production network from implementing the project, a second reason for AquaNitor to implement the project can be formulated:

2. The restructuring project does not entail any changes in the distribution of products across plants, and thus does not affect neither the total productivity of the ceramics production nor the sensitivity to changes in demand.

According to Slack & Lewis (2020), having focused sites allows each site to clearly focus on its respective relevant performance objectives, develop appropriate targeted resources, and achieve enhanced learning and improvement capabilities. Since this aligns with the benefits AquaNitor expects from the restructuring project, this confirms the idea that the project could be beneficial. Moreover, due to processing all kaolin and clay centrally in the preparation plant, there would be greater chances of achieving economies of scale, compared to the current situation. This is confirmed by Slack & Lewis (2020), stating that economies of scale are achieved by processing larger volumes in one place. Consequently, theory seemingly indicates that AquaNitor's expected benefits are realistic. However, to draw conclusions about the restructuring project's real impact on the production-related waste, the CO2-emissions associated with the current and future logistics system, or the new raw material prices, would require specific analyses on each topic, which this study did not include. Considering the analysis of AquaNitor's operations strategy and the scope of this study, a third reason for AquaNitor to implement the restructuring project can be formulated:

3. The benefits that AquaNitor expects to receive from the restructuring project align well with those suggested by theory, considering the characteristics of AquaNitor's operations strategy.

In this study, four possible barriers to implementing the restructuring project were identified, one of which is the lack of a structured project process. It was identified by most respondents stating that there is no standard for how to conduct projects of any size. Therefore, the success of projects is currently heavily dependent on the knowledge of the individual project manager, and both the interviews with NE project managers and the survey with frontline workers indicate that projects are varyingly successful, especially in terms of employee well-being. Consequently, the restructuring project may suffer when there is no identified best practice. While most respondents had identified the issue of not having a standardized project process, there is seemingly no consensus regarding how a standardized project

process should look. However, the general consensus among the project managers in NE is that the new project process should have clearly defined gates and milestones, which suggests that they want to achieve a "Stage-Gate" process, as described by respondent B. However, they argued that the traditional "Stage-Gate model" may be too bureaucratic for AquaNitor, which aligns well with the information about the company's flat hierarchy and open culture. Therefore, AquaNitor could adapt the "Stage-Gate model" to create a standardized, structured process which is specifically suited to its needs, thus eliminating the process's lack of structure as a barrier. Moreover, AquaNitor can avoid the process becoming too bureaucratic and time-consuming. Thus, AquaNitor may also avoid the "bureaucracy and hierarchy" barrier to knowledge sharing, as described by Disterer (2001). In the case of this particular restructuring project, creating a structured project process is highly beneficial in anticipation of large future projects. If the restructuring project is successfully implemented, AquaNitor will have even more organizational instances, magnifying the chaos of an unstructured project process.

Another barrier is the lack of standardized documentation, which is related to the lack of a structured project process. While the sharing of tacit knowledge seems to be adequate within AquaNitor, in the step that Nonaka (2007) describes as socializing, there is an obvious lack of articulated knowledge, i.e. explicit knowledge. For example, tacit knowledge is shared within the organization through the lessons learned meetings, which both NE and CE described conducting versions of. Similarly, new hires are directly immersed in projects. Thus, while AquaNitor is seemingly good at socializing, it is less proficient at articulating. An example indicating this is that some NE respondents explicitly stated that the lessons learned meetings are insufficiently documented. Moreover, since CE project managers also discussed conducting similar meetings, while describing a deviant content, the gathered input and knowledge is seemingly not combined and shared across plants. Thus, tacit knowledge is shared between the attendants, but it is never properly externalized into comprehensible, easily accessible documentation. Therefore, the barrier of a lack of standardized documentation is a barrier of a lack of documented explicit knowledge.

Due to the lack of documentation, knowledge from the lessons learned meetings can never be internalized by people not present at the meeting, and the organization cannot build its knowledge from these meetings. For that reason, AquaNitor may suffer the same pitfalls in several projects over time, despite their belief that the lessons learned meetings mitigate repeating similar mistakes. Related to this is the under-communicated learning platform apparently available on AquaNitor's intranet. While having such a platform holds potential, it falls short in its effectiveness when its existence is not widely shared in the organization. Furthermore, when described by respondent K, it does not seem to embody the targets presented by Nonaka (2007). As previously mentioned, Nonaka (2007) stresses the importance of all knowledge within an organization being available to all employees so as to encourage and maximize ideation. In the interview with respondent K, they mentioned that some knowledge and documentation is only available to top management. Hence, the AquaNitor's learning platform does not embody Nonaka's (2007) recommendations, limiting their possibilities for innovation in the company. The limited and slightly unknown learning platform is not itself a barrier to the successful completion of the restructuring project, but it speaks to a broader pattern of not sharing the company's knowledge throughout the organization.

Considering the two barriers related to the lack of documentation, the lack of a structured project process and the lack of documented explicit knowledge, it is interesting to discuss the impact the restructuring project could have on the knowledge- and information sharing between plants. As discussed above, a lack of top-down steering, regarding decisions for and formalization of operational tasks, could be a reason for the lack of standardization of the project process and documentation. Consequently, the

knowledge- and information sharing throughout the group is currently suboptimal. While the restructuring project would not necessarily directly improve the knowledge- and information sharing, it presents an opportunity for AquaNitor to improve in this aspect. As outlined in the results, one of the key drivers for the restructuring project is to standardize the slip production process, since it currently varies greatly between plants. By centralizing the slip preparation, and adjusting the production plants accordingly to receive the ready-mix, the entire slip production process would be standardized across all of the involved production plants. Therefore, a possibility arises for AquaNitor to utilize the increased standardization to improve their sharing of information and knowledge. With increased standardization, the production plants have more processes in common; it allows them to "speak the same language". This lowers the language barrier to knowledge sharing between plants, as described by Disterer (2001). Moreover, having a shared process across plants makes it less demanding to standardize documentation across plants. Furthermore, increased inter-plant standardization makes it easier, and more relevant, to coordinate improvement efforts. Therefore, as suggested in the results regarding the expected benefits of implementing the restructuring project, a fourth argument for AquaNitor to implement the project can be formulated:

4. The restructuring project presents an opportunity for AquaNitor to standardize processes, which in turn lowers barriers to information- and knowledge sharing between plants.

The third barrier is the unstandardized involvement of frontline workers. The interviews uncovered that while the project managers realize the need to include the people affected by a change early in the project process, usually meaning frontline workers, this practice is not standardized. Respondent B stated that this has created a feeling of pointlessness among the frontline workers, which the survey seems to confirm. Despite the low response rate of the survey, these findings are deemed suggestive of the actual situation at the surveyed NE plant, due to its alignment with the unstructured process and the statements of respondent B. Nonaka (2007) discusses how frontline employees are essential to knowledge creation, as they are the company's experts on day-to-day operations. In the current situation, the factory workers are not as included as Nonaka (2007) insists that they need to be. If the frontline employees' experiences and opinions are not sufficiently accounted for, the restructuring project may not reach its full potential as the people most immersed in the actual production processes are not formally included. To mitigate a loss of quality of the restructuring project, AquaNitor could look to the learnings of Nonaka & Takeuchi (1995) and their Knowledge Spiral. By better being able to collect and articulate frontline workers' tacit knowledge, it could be highly beneficial to the quality of AquaNitor's change initiatives, and to its knowledge creation overall.

Lastly, a fourth barrier was identified: the unstandardized performance measurement. Due to the lack of formal guidelines for documentation, AquaNitor Group experiences varying degrees and quality of explicit knowledge between plants. Different plants measure different aspects in their production, which presumably creates difficulties in comparing the plants' operations to each other. Therefore, it is interesting to consider the justification for the proposed restructuring project. In this study, the expected benefits from the restructuring project were collected and evaluated based on theory, but not further investigated. As previously discussed, this study can therefore not be used as an exhaustive guide for whether AquaNitor should implement the project or not. Further analyses are required. For this fourth barrier, this remark is especially important. If the values for the key factors which comprise the basis for the justification of the restructuring project are insufficiently documented, AquaNitor cannot be certain that the restructuring project will yield more attractive outcomes in those factors. However, as previously discussed, the theory of Slack & Lewis (2020) suggests that since the restructuring project entails increased specialization of each plant, AquaNitor can expect benefits such as an increased ability to

focus on each plant's relevant performance objectives and to develop appropriate targeted resources. Thus, the restructuring project could present an opportunity for AquaNitor to overcome the barrier of unstandardized performance measurement. Through each plant focusing on production of its respective product lines and not on producing slip, more effort can be allocated to specifically developing targeted production capabilities.

From the results of this study, two further possible barriers can be identified: the CSW industry's dependence on the state of the economy, and the consolidation of wholesalers. Both these possible barriers are deemed to not be significant to the implementation of the restructuring project, based on AquaNitor's market position and operations strategy, and the characteristics of the restructuring project. Firstly, the interviews uncovered that when the pace of new construction projects is halted, the demand for CSW products drops. Thus, since the construction industry is dependent on the state of the economy, so is the CSW industry. Consequently, there can be a lot of uncertainty regarding future sales, which could pose a barrier to the restructuring project, based on Slack & Lewis's (2020) claims that uncertainty plays a large part in making strategic capacity decisions. As identified in section above, AquaNitor's capacity strategy aligns with Slack & Lewis's (2020) notion of capacity leads demand, indicating that the current level of demand is a driver rather than a barrier to implementing the restructuring project. Moreover, since AquaNitor is one of the larger actors in the CSW industry, it may be beneficial for them to risk a large investment even during an economic recession in order to potentially gain market shares when the economy turns. Secondly, another possible barrier is the consolidation of wholesalers, identified in the results regarding the CSW industry, which forces CSW companies to push their prices down to maximize sales. However, while this trend is a threat to the overall industry, it is not deemed to be a barrier to AquaNitor's restructuring project. On the contrary, because the project is expected to reduce waste and stabilize the plants' processes, it will likely allow for higher margins for the products. Therefore, when wholesalers demand lower prices, AquaNitor will have better conditions to meet the customers' increasing demands.

As previously discussed, this study did not include an exhaustive investigation of neither AquaNitor's capabilities nor the actual implications of the restructuring project. Rather, this study identified latent structural aspects inherent to AquaNitor to enable building a perception of the social context of the company. In this section, the attractiveness of the restructuring project has been discussed, based on AquaNitor's social context, as uncovered by this study. Thus, ignoring aspects such as the projected profitability or availability of suppliers for the new raw materials, the restructuring project seems to align with AquaNitor's operations strategy, due to the four aspects derived in this section. However, four barriers to implementing the project were identified in AquaNitor, and supported by theory: the lack of a structured project process, the lack of documented explicit knowledge, the unstandardized involvement of frontline workers, and the unstandardized performance measurement. Furthermore, two other factors, the CSW industry's dependence on the state of the economy and the consolidation of wholesalers, were identified as possible barriers, but assessed to not be significant to the implementation of the proposed restructuring project.

5.2.3 Generalization of Barriers to the European CSW Industry

To complete the answer to RQ2, this section contrasts the results of the study with the discussions above, to conclude which of the identified barriers to large-scale restructuring projects may be generalized over the European CSW industry. As reiterated above, four main barriers to the implementation of the proposed restructuring project were identified in AquaNitor. While these barriers could be obstacles to

implementing successful change to any company, as suggested by theory, they are not necessarily generalizable to companies in the European CSW industry. Since this study has not investigated specific processes in any company other than AquaNitor, none of these barriers can be generalized to the European CSW industry. However, they could be generalizable to any company, in the CSW industry or other manufacturing industries, in similar situations to the one of AquaNitor.

Another possible barrier that was discussed above is the CSW industry's dependency on the state of the economy. This barrier was deemed not to be a devastating threat to AquaNitor, due to the company's market position and capacity leads demand strategy. Due to the nature of the discussion regarding this barrier, it might be applied differently to other companies in the CSW industry. For companies in the industry with similar characteristics as AquaNitor, the relationship to the barrier might be the same. As stated by respondent H, the ability to invest continuously can significantly increase a company's competitive abilities. This was also supported by Slack & Lewis's (2020) description about a capacity leads demand strategy. Therefore, for other companies in the European CSW industry with a strong market position, and the ability to continuously invest regardless of the state of the economy, this barrier does not necessarily pose a threat. Thus, this is presumably true for the other companies part of the European CSW industry oligopoly. However, for smaller or younger companies, with less capital to invest, the barrier of the industry's strong dependency on the economy could be devastating.

Another possible barrier to European CSW companies is the consolidation of wholesalers. Due to this trend, CSW companies are pressured to reduce their margins, and if a restructuring project results in increased costs, margins could be pressed to critical levels. However, the barrier of decreased margins due to the consolidation of wholesalers was deemed to not be relevant for AquaNitor and its proposed restructuring project. As for the barrier of dependency on the economy, the barrier of decreased margins could be assumed to carry similar relevance for other companies in the European CSW industry with similar characteristics as AquaNitor. However, the smaller or younger the company, this barrier could also be increasingly significant. This was further confirmed during the interviews, mainly by respondent G, who stated that the consolidation of wholesalers makes it difficult for smaller companies. Due to the wholesalers demanding lower prices, and simultaneously growing in size and bargaining power, smaller companies face difficulties getting their products to market. Therefore, the barrier of decreased margins might be more significant to other segments of the European CSW industry than that of AquaNitor.

From the result regarding trends in the European CSW industry it was apparent that some trends vary geographically. For example, the trend of customers preferring wall-hung or floorstanding WCs. Therefore, some trends might be generalizable to CSW companies competing in the same regions. While this section considers barriers to implementing large-scale restructurings, and not trends, the same argumentation can be applied to the barriers discussed here. The analysis of the European CSW industry using Porter's five forces is based on a consolidation of information about European CSW actors. Therefore, little consideration of local differences and similarities were considered. Consequently, the discussions in this section regarding the generalizability of barriers, might be valid for a consolidated perspective of the European CSW industry. However, the conclusions might vary slightly between regions.

5.3 Combining Change- and Knowledge Management to Achieve an Increased Focus on Employee Well-Being

This section combines the answers to RQ1 and RQ2 with existing theory on change management and knowledge management to answer the study's final research question, RQ3. As the title of the section suggests, this research question is concerned with combining change- and knowledge management theory to define how to achieve an increased focus on employee well-being. First, the previous discussions regarding RQ1 and RQ2 are used to formulate five takeaways regarding organizational aspects that can affect change initiatives, based on the findings in the AquaNitor case. Thereafter, these takeaways are discussed and used to formulate two high-level recommendations for how to achieve increased employee well-being in manufacturing companies.

5.3.1 Takeaways From AquaNitor

From the findings regarding the unstructured project process, it seems from the results that AquaNitor has realized the need to standardize and formalize the project process to improve its output. Furthermore, the findings identified currently ongoing initiatives to create a new project process, due to experienced issues with the current unstructured process. However, the initiative to create a new process is driven in several plants in a decentralized manner, and according to the results of the study, without any inter-plant coordination. As presented by Mårtensson (2000), poor knowledge management makes organizations less efficient, since they become dependent upon the knowledge of specific individuals. From the decentralized and uncoordinated initiatives described here, it seems that AquaNitor is experiencing such a dependence. Consequently, the existing theory supports the findings' indication that poor knowledge management presents a barrier to implementing effective change. AquaNitor has also realized this issue, and has by attempting to formalize the project process the company has begun to improve the knowledge management in the organization. While there are several ongoing initiatives, many descriptions of the desired project process included defined milestones and gates. Formalizing such a project process inherently requires what Nonaka (2007) described as articulation. The respondents both from NE and CE described how they have begun creating a project process based on their, and other project managers', experience and observations from the current way of working with projects. Thus, by documenting this, they are turning tacit knowledge into explicit knowledge through articulation. However, as discussed above, the current level of articulation seems to be insufficient, which makes the process both inefficient and confusing. Consequently, this case study signals the need for organizations to consider *how* they are articulating their tacit knowledge, which results in the first takeaway from this study:

1. It is important for companies to consider how they are articulating their tacit knowledge.

Furthermore, considering Nonaka & Takeuchi's (1995) Knowledge Spiral, there seems to be a lack of combination of explicit knowledge within the company. As described by Mårtensson (2000), one crucial benefit of sharing knowledge is becoming less reliant on the knowledge of certain individuals. Moreover, reflecting on Mårtensson's (2000) and Nonaka's (2007) notions on turning tacit knowledge into explicit, companies should attribute equal importance to consolidating explicit knowledge between plants as to articulating the tacit knowledge in each plant. In the theory chapter some barriers to knowledge sharing were listed, from Riege (2005) and Disterer (2001), which may apply to varying extent in AquaNitor's case. Most prevalent are the barriers from Riege (2005), such as poor integration of knowledge management into the strategy, and lack of leadership and managerial direction for communicating the value of knowledge sharing. Based on the results from this study, knowledge

management seems to be an important topic at AquaNitor, yet it is insufficiently formalized. Presumably, this is a consequence of the lack of standardized project processes. The topic of insufficient structures for knowledge sharing was also discussed above, where it was concluded that the scarce knowledge management practices at AquaNitor resulted in several barriers to implementing the restructuring project. Consequently, the study's second takeaway is:

2. It is important to integrate knowledge management practices into the company's overall strategy.

As previously discussed, the unstandardized ways of working in AquaNitor has also created ambiguities in performance measurement. While the restructuring project has some expected benefits, for example in reducing waste, the way of measuring production performance is unstandardized between plants. According to Jacobsen & Thorsvik (2021), one prerequisite for implementing successful change is that the measures being implemented are based on research. In the case of AquaNitor, there seems to be a lack of research supporting the change, in terms of actually proving the current inefficiencies in each plant. In addition to contradicting the advice from Jacobsen & Thorsvik (2021), lacking evidence that the change is essential creates a risk of the change being less effective than expected, and thus resulting in sunk costs. Moreover, Jacobsen & Thorsvik (2021) emphasized that to be successful, the objectives and reasons for the change initiative must be communicated throughout the organization. While AquaNitor's restructuring project is only in an initial stage, and therefore is not yet communicated throughout the organization, the lack of research can create problems in communicating the necessity in a later stage. Consequently, the third takeaway from this case study is:

3. It is important to formulate clear objectives for change initiatives, which are based on real illustrated data.

In this study, AquaNitor was assessed to be on stage 3 in Hayes & Wheelwright's (1984) four-stage model, indicating that its operations are internally supportive and among the best in the industry. Furthermore, this was concluded to be among the benefits of conducting the restructuring project, since investing in better operations capabilities supports AquaNitor's operations strategy, as depicted in this study. Slack & Lewis (2020) discuss the impact of various decisions on a company's operations strategy. Consequently, it is seemingly important to consider the operations strategy, especially at higher stages in the four-stage model, when implementing change. Considering that respondents both from NE and CE discussed the importance of involving factory workers early in change initiatives, AquaNitor seemingly aims to drive change in a bottom-up manner. However, according to the results, this mindset has not spread throughout the organization. This is indicated both by some of the NE project managers who participated in this study and by the survey of NE frontline workers. Therefore, there is seemingly a gap between AquaNitor's intended operations strategy and the practical way of working. As a result, frontline workers cannot realize their desired input and possible impact on change initiatives. Presumably, change initiatives are not as bottom-up driven as the company would like them to be, since frontline workers are not able to contribute to the company's knowledge creation, which Nonaka (2007) recommends. By formalizing the project process, as discussed above, the process of gathering information and opinions of frontline workers could be standardized. Thus, by formalizing the project process in a top-down manner, the process of driving change in a bottom-up manner could be strengthened. Consequently, the study's fourth takeaway is:

4. It is important to clearly align actions taken in change initiatives with the overall operations strategy.

As discussed by Jacobsen & Thorsvik (2021), there are different types of change, and therefore each situation requires a different approach. Regarding the company's operations strategy, it was discussed that at AquaNitor, change is driven bottom-up or top-down depending on the type of change initiative. For large-scale initiatives, such as the restructuring project, the initiative is driven in a top-down manner. According to Dunphy & Stace (1993), this is suitable for a project like this one, which entails a large-scale change, rather than fine tuning adjustments. From the Dunphy/Stace matrix, it is depicted that for larger-scale change, the strategies dictatorial transformation and charismatic transformation are most suitable. However, in top-down driven change, it is crucial to have a clear strategy for how to ensure employee well-being, as indicated by McLaren et al. (2023) and Jacobsen & Thorsvik (2021). This is also implied by Dunphy & Stace's (1993) charismatic transformation strategy and the utilization of change agents. As described by Coelho et al. (2023), presented in the introduction to this report, employee well-being is becoming increasingly important, and can perhaps be expected to affect companies' competitiveness. Presumably, it is not only the competitiveness toward competitors that is affected, but also the attractiveness as an employer. In change initiatives, having a strategy to deal with employee well-being is especially important, since challenging the status quo causes uncertainty and anxiety, as presented by Jacobsen & Thorsvik (2021). Especially for restructuring projects, employees might fear that the content or existence of their role is challenged, according to Jacobsen & Thorsvik (2021), which was also raised as a concern by project manager respondents in NE. One strategy for ensuring employee well-being during change initiatives is to use change agents, as suggested by Jacobsen & Thorsvik (2021) and Lunenberg (2010). By having someone charismatic and trustworthy communicate the change, employees' feelings of uncertainty and anxiety could be reduced. Consequently, for change to be successful and not negatively affect the culture or competitiveness of a company, the change strategy should include a plan for how to ensure employee well-being. Thus, the final takeaway from this study is:

5. To implement successful change that does not negatively affect the culture or competitiveness of a company, it is important that the change strategy includes a plan for how to ensure employee well-being.

5.3.2 Recommendations for an Increased Focus on Employee Well-Being

The five takeaways formulated in the previous section can be divided into two groups: takeaways 1 and 2, and takeaways 3 through 5, respectively. Starting with the former group, the first two takeaways are both related to the company's knowledge management practices. While the first takeaway is directed toward codifying knowledge management practices, and specifically toward reviewing the practices for creating explicit knowledge, the second takeaway is concerned with the actual takeaways of these practices into the strategy. As previously discussed, this study indicates that proper knowledge management can have a positive effect on employee well-being. Specifically, this study treated the topics of not repeating past mistakes and involving employees in projects. However, as the findings from the AquaNitor case indicates, the practices must be properly formulated, codified, and revisited, to have the desired effect. These practices could include standardizing the manner of documentation, both for knowledge creation and collection of feedback. This would presumably also lessen frontline workers' feelings of pointlessness, if the manner of feedback collection is communicated to them. Moreover, companies could look to the insights of Riege (2005) and Disterer (2001) and lower the

barriers to knowledge sharing as described by them. Therefore, the first recommendation for achieving increased employee well-being in large manufacturing companies is:

1. Integrate knowledge management practices into the company's strategy, to be able to articulate the tacit knowledge into explicit knowledge.

The second group consists of the three remaining takeaways. While the first two takeaways, as discussed above, emphasize the need for integrating knowledge management practices into the strategy, the latter three are more focused on the actual actions taken by the company while undergoing a change. This study found, through the AquaNitor case, that to be successful, a change process should include clear objectives based on real data and actions which are aligned with the overall operations strategy. Thus, the study indicates that a change process should not be viewed as separate from the company's operations strategy, or as an exception, but rather as a tool for realizing the operations strategy. Applying a broader perspective, each change process should be derived from a comprehensive change strategy, which in turn is anchored in the operations strategy. Furthermore, by applying existing theory on change management to the case of AquaNitor, this case study indicates that to achieve employee well-being, simply valuing employees highly is not sufficient. Rather, practices for how to account for well-being must be explicitly decided on and included in the change strategy. Consequently, the second recommendation for achieving increased employee well-being in large manufacturing companies is:

2. Use the new explicit knowledge and data to formulate a change strategy with clear objectives and actions, which clearly aligns with the overall operations strategy and includes employee well-being.

By discussing the findings in relation to existing theory, the findings were consolidated to the more general recommendations formulated in this section. However, since this study investigated the specific case of AquaNitor and its proposed restructuring project, the conclusions drawn in this study should be considered most accurate for companies with similar characteristics as AquaNitor. Therefore, the recommendations can be considered to be specifically aimed at manufacturing companies who, similarly to AquaNitor, are undergoing large changes or restructurings.

6 Conclusions

The purpose of this study was to determine how large manufacturing companies can increase their focus on employee well-being, in an operating context characterized by contradicting requirements. To fulfill this purpose, the study investigated AquaNitor, one of the largest actors in the European CSW industry, and its proposed restructuring project. The study found that based on the project characteristics and AquaNitor's operations strategy, implementing the restructuring project could strengthen the company's competitive advantage and provide it with an opportunity to standardize its processes. However, the investigation of project management at AquaNitor provided interesting findings regarding the change- and knowledge management practices in the company, which ultimately resulted in the identification of four barriers to implementing the restructuring project.

The answers to the study's two case company centered research questions were combined and compared to existing theory, which resulted in the identification of five takeaways from the case company. These five takeaways were further combined and resulted in the formulation of two recommendations for large manufacturing companies to increase employee well-being, as presented in Table 6.1, thus answering the study's final research question. Ultimately, the recommendations were formulated to support organizations in avoiding the risk of poor change- and knowledge management inhibiting effective change, specifically targeting two issues found through the study. First, the case study of AquaNitor uncovered that poor knowledge management could result in decreased employee well-being, specifically through a lack of involvement and an insufficient utilization of obtained feedback. Second, the study further confirmed existing theory by demonstrating the need for a coherent strategy, where change is not treated as an exception to the status quo, but rather as a tool to realize the operations strategy.

Table 6.1

Takeaways and Resulting Recommendations for an Increased Focus on Employee Well-Being

	Takeaways	Recommendation
1.	It is important for companies to consider how they are articulating their tacit knowledge.	Integrate knowledge management practices into the company's strategy, to be able to articulate the tacit knowledge into explicit knowledge.
2.	It is important to integrate knowledge management practices into the company's overall strategy.	
3.	It is important to formulate clear objectives for change initiatives, which are based on real illustrated data.	Use the new explicit knowledge and data to formulate a change strategy with clear objectives and actions, which clearly aligns with the overall operations strategy and includes employee well-being.
4.	It is important to clearly align actions taken in change initiatives with the overall operations strategy.	
5.	To implement successful change that does not negatively affect the culture or competitiveness of a company, it is important that the change strategy includes a plan for how to ensure employee well-being.	

The conclusions from this study offers insight to how large manufacturing companies can improve their focus on employee well-being, through incorporating change- and knowledge management practices. The case company specific findings were both generalized over the European CSW industry and supported by theory, to formulate the recommendations. Therefore, the conclusions from this study can be considered to apply outside of the case company to help organizations navigate the rapidly changing operating context of today. However, since this is a case study, the conclusions and recommendations are most relevant to companies with similar characteristics as AquaNitor. This study further contributes to theory by describing the European CSW industry, which has previously not been extensively investigated in business research. Since the barriers identified in this study were concluded to be related to AquaNitor's internal processes, further research regarding general process structures within the European CSW industry is required to draw conclusions regarding the existence of structural barriers in the industry as a whole. Another interesting topic for future research would be the first mover implications of a change initiative in the industry, similar to the one investigated here.

Ultimately, this study revisits the heavily researched topics of change- and knowledge management, and highlights that while having received much attention in theory, employee well-being still requires more targeted attention within manufacturing companies. Therefore, the provided recommendations may act as a starting point for shifting their focus.

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Appendix A: Interview Guide Project Management

1. Tell us about your role at [AquaNitor]. How have you worked with projects?

2. What types of projects have you led? Can you provide an example?

3. What did you think about the onboarding when you first started at [AquaNitor] in this role? What did you learn about project management at [AquaNitor]?

4. Are there any central guidelines, within CER or [AquaNitor] overall, for how to plan and implement change?
- How early are you supposed to inform and/or involve those affected by the change?
- To what extent, or in what way, are those most affected by the change involved in the project?
- Who is responsible for the project complying with these guidelines? How is this followed up?

5. Are there any guidelines regarding sustainability in projects? Is this seen as a central aspect or is it more of a “bonus”?
- Three dimensions: Economic, ecological, and societal

6. Is there a system for evaluating change initiatives?
- Does it consider the ones affected by the change to catch “soft aspects”? I.e., how the people felt during the implementation or how they might have liked things differently?
- How do you work with the feedback you receive?

7. Do you generally feel that people are compliant during the implementation of large projects, or are people reluctant to change?
- How does [AquaNitor] work with learning anxiety and survival anxiety?

8. Is there anyone else you think that we should contact to get more information on these topics?

Appendix B: Interview Guide CSW Industry

1. Tell us about your role at [AquaNitor].

2. What is the competitive situation like in the European market?
   - Which are [AquaNitor] largest competitors? If you don't want to say, can you tell us about the largest actors in general?
   - Do you know how large the market is (in terms of sales)? Can you tell us [AquaNitor's] market share?

3. What drivers and opportunities can you see in the market?

4. What are the current trends in the market?

5. What threats or limitations can you see in the market?

6. We have understood that suppliers have a relatively strong bargaining power in the market. Is this the case with the customer's bargaining power as well?

7. Are there any sustainability considerations in the industry? For example, any regulations or trends specific to ecological sustainability?

8. Is there anything you would like to add?

Appendix C: Survey

Change initiatives at [AquaNitor]

This survey is part of a thesis project at Chalmers University of Technology in Gothenburg, which, among other things, touches upon change in larger organizations. The thesis project is conducted in collaboration with [AquaNitor], and therefore the survey targets production workers at the plant in [Northern Europe]. The survey takes about 5 minutes to answer, and contains questions about your experiences of larger changes within the company, as well as your opinions on them. Finally, the survey contains hypothetical questions about how you want a change to be implemented.

All survey responses are anonymous and will only be used for academic purposes. All collected data will be handled according to Chalmers's guidelines on GDPR. At the end of the study, all collected data from the survey will be deleted.

If you have any questions regarding the survey, or the use of the answers, please contact us: [The authors' e-mail addresses.]

By answering the questions and sending in the survey, you give your consent on participating in the study. Thank you for your participation!

*Compulsory question

[Symbols:
O *Choose only one option*
▢ *Choose one or more options*
____ *Write-in answer]*

1. How old are you?*
O 25 years or younger
O 26-35 years
O 36-45 years
O 46-55 years
O 56 years or older

2. For how long have you worked at [AquaNitor]?*
O Less than 1 year
O 1-3 years
O 4-8 years
O Longer than 8 years

3. Have you, during your time in the company, experienced a large project which has changed your day-to-day work?*
O Yes
O No

If the respondent answered Yes to question 3:
4. Have you experienced more than one change initiative at [AquaNitor]?*
O Yes
O No

If the respondent answered Yes to question 4:
Differences between projects
This section contains questions about your experience of differences in change efforts between projects.

5. Do you feel like the quality of change efforts has varied between projects?*
O Yes, it has varied
O No, they have been of the same quality

6. If yes, has it become better over time, or has it varied between different projects?
O It has become better over time
O It has varied between projects

7. If you answered that it has become better over time, in what way has it become better?

_____

8. If you answered that it has varied between projects, for what reason has it varied?
▢ The size of the projects has varied
▢ Different project managers
▢ Different types of projects
▢ Other… [write-in option]

If the respondent answered No to questions 3:
Your experience of change initiatives
The following section contains questions regarding your experiences of participating in change initiatives. If you have experienced or participated in more than one change initiative, base your answers on your experiences of the latest project.

9. To which degree did you feel like you were informed about changes in the company?*

I didn't feel informed at all	O 1	O 2	O 3	O 4	O 5	I felt fully informed

10. Did you feel like you were informed in time about coming changes which directly affected your work?*

I heard about the change the day it was implemented	O 1	O 2	O 3	O 4	O 5	I received all information related to the change in a timely manner

11. To which degree did you feel like you had the opportunity to affect process changes?*

I had no effect on the changes	O 1	O 2	O 3	O 4	O 5	I felt like I had the opportunity to affect the changes

12. If you answered that you felt like you couldn't affect the process changes, was it because you weren't given the opportunity or because no one listened to your suggestions?

O I wasn't given the opportunity to give suggestions
O I gave suggestions, but no one listened to them
O Other… [write-in option]

13. Have you ever felt stressed or anxious about having to learn a new way of working, as a result of the implementation of a larger change initiatve?*

I haven't felt stressed or anxious	O 1	O 2	O 3	O 4	O 5	I have felt a lot of stress and/or anxiety

Following question 13, or if the respondent answered No to question 3:
Preferences for future change initiatives
The following section contains questions about how you would like a hypothetical future project to be implemented.

14. To which degree do you want to be informed about changes in the company?*

O I don't want to be informed before the change is implemented
O I only want to be informed about changes that affect my work
O If the change affects my work, I want to be informed in a timely manner, otherwise I can find out when the change happens
O I want to be informed about all changes in a timely manner

15. How do you want to be informed about coming changes?*

O E-mail
O Meetings
O [AquaNitor's] intranet
O Note in the breakroom/on a bulletin board
O All of the above
O Only one way is enough, but it doesn't matter which one
O Other… [write-in option]

16. To which degree would you like to be given the opportunity to affect how change initiatives are implemented?

I don't want to affect the changes at all	O 1	O 2	O 3	O 4	O 5	I would like to give my input to every step of the process

17. Would you be open to participating in an interview about [AquaNitor's] change efforts? The interview would take no more than 1 hour and occur over Teams. You would be anonymous. If yes, please enter your e-mail address below.

_____

Appendix D: Survey Information Note

SURVEY: Change initiatives at [AquaNitor]

Hello!
We are two students from Chalmers University of Technology in Gothenburg who are currently writing our master's thesis with [AquaNitor]. As a part of this, we want to hear from the production workers in [the NE plant] regarding change initiatives within the company, both your experiences and your preferences on hypothetical future projects.

The survey takes about 5 minutes to complete. You can either manually type in the link below into your browser, or scan the QR code to go directly to the form. Participation is completely voluntary, but we appreciate all the help we can get.

All survey responses are anonymous and will only be used for academic purposes. All collected data will be handled according to Chalmers's guidelines on GDPR. At the end of the study, all collected data from the survey will be deleted.

If you have any questions regarding the survey, or the use of the answers, please contact us:
[The authors' e-mail addresses.]

By answering the questions and sending in the survey, you give your consent on participating in the study. Thank you for your participation!

[QR code]
[URL]

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