CHALMERS
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Drivers and Prerequisites for Digitalization for Public Companies

A case study at Västtrafik

Master’s Thesis in Quality and Operations Management

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Abstract

It is crucial for today’s companies to handle the development of technology to stay relevant and competitive. The concept of digitalization is a growing trend, which when successfully conducted, strongly contributes to increased efficiency and sustainability of a company. Hence, affects a company’s relevance and competitiveness. Moreover, public companies struggle with conducting change initiatives and have a hard time keeping up with technology as compared to private companies. Therefore, the knowledge gap regarding digitalization for public companies is an area that needs to be investigated to create an understanding of drivers for digitalization as well as the required prerequisites.

Hence, the purpose of this study is to understand why public companies need to digitalize, and what should be considered to prepare for digitalization. The study aims to gain an understanding of public company's approach to digitalization, as well as to assess the current situation and develop recommendations for how to prepare for a potential digitalization.

To fulfill the purpose of the study, a qualitative case study was conducted at Västtrafik. Drivers and prerequisites for digitalization were identified through interviews and observations and later confirmed in a document analysis for one of the company’s main processes. The empirical data was analyzed through thematic analysis, where the results were put in relation to the theoretical framework. The conclusion showed that it is important for public companies to understand why they need to digitalize and the obvious relationship to efficiency and sustainability, as well as the needed prerequisites in terms of what should be considered to increase the chances of digitalization success. In conclusion, resource-demanding processes, difficulties in conducting, navigating and following up the process, as well as unclear responsibilities and a loss of control was identified as drivers for digitalization. Moreover, ability to allocate resources, capabilities to change, and standardized processes was identified as prerequisites for digitalization. Recommendations for Västtrafik were developed and divided into different steps regarding how to proceed with the process of preparing for a digitalization.

Keywords: public companies, digitalization, competitiveness, efficiency, sustainability, standardization, Lean, change management

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Calle Engelbrektsson & William Palmquist, Gothenburg, May 2023

List of Acronyms

Below is the list of acronyms that have been used throughout this thesis, listed in alphabetical order:

5S
- A methodology for Sort, Set in order, Shine, Standardize, and Sustain

ISO
- International Organization for Standardization

SIPOC
- Supplier, Input, Process, Output, Customer

TBL
- Triple Bottom Line

VSM
- Value Stream Map

Table of Content

1 Introduction

In this chapter, an introduction to the Master's thesis is presented to the reader. Firstly, a background to the case study is described followed by a problem description that contains the relevance of the study. Moreover, the purpose and aim as well as research questions are presented based on the above. At the end of the chapter, the thesis' limitations are presented.

1.1 Background

In a society of a frequently changing market environment with constantly shifting demands, it is crucial for today's companies to be able to handle the development of technology and innovation to stay relevant and competitive (Sansone et al., 2017). Competitiveness can be challenging to define, but generally, the operations with the lowest costs that can produce or generate the highest value are those with the highest competitiveness (Tillväxtverket, 2018). Furthermore, competitiveness is a concept that may differ depending on the company's circumstances. For example, if a company is product-oriented or service-oriented, or if the organization is aiming to obtain profit respectively not, the concept of competitiveness must be treated accordingly and most importantly always be remembered. Hence, competitiveness is a way of motivating development and continuous improvements internally to achieve benefits externally and can therefore also be highly subjective depending on the business situation.

One way for companies to increase their competitiveness is by making their operations more efficient. According to Industrirådet (2016), efficiency in terms of operations and costs is essential to deliver high-value services from a low use of resources, which satisfies the customers whilst keeping the costs down. Moreover, another aspect to consider to achieve competitiveness is sustainable development (Sarkis & Rasheed, 1995). The authors describe sustainable development as a new source of innovation and an opportunity for achieving competitive advantage through cutting costs. A way to grasp the commonly anticipated wide concept of sustainability is through the Triple Bottom Line (TBL) (Savitz, 2013). The TBL can be divided into *People*, *Planet*, and *Profit*, whereas the main idea and initial thought of this division is for a company to move from the old concept of just involving *Planet*, to look at other aspects of sustainability as well (Fisk, 2010).

Even if the concept of competitiveness varies as an effect of business situations, i.e., public vs private companies, high efficiency and sustainability are two essential concepts to be considered and eventually obtained (Sansone, 2017; Xiaotian & Zilin, 2023). Digitalization, as a matter of fact, can help increase both (Staniulienė & Lavickaitė, 2022; Zoltners et al., 2021; Gray & Rumpe, 2021). According to Gray and Rumpe (2015), digitalization is described as the actual use of digital technologies that are needed to change a business model to increase the value of the business. Moreover, according to Truant (2021), digitalization is a growing phenomenon that impacts a company's processes, structure, and strategy that comes with different opportunities and challenges. Whilst the opportunities are many and mainly revolve around increased efficiency and sustainability, the challenges revolve around organizational prerequisites to digitalize. Such as the need for a standardized process as described by Wanicho (2021), and investment and leadership support as described by (Morgan, 2019). Lean is one of the most prominent tools to standardize and reach efficiency within all types of operations through the reduction of waste, hence also improving sustainability (Petersson et al. 2015). Moreover, the potential implementation of Lean commonly involves going through the process of organizational change, whereas change management need to be considered for a successful change (Kotter, 2007).

1.2 Problem Description

This report illuminates the challenges that appear for public companies that have not invested in digitalization, and how to address them to achieve efficiency and sustainable development. According to Checsinki et al. (2019), organizational change efforts within the public sector have a higher fail ratio as compared to private-sector transformations. One reason for this is the fact that public-sector organizations possess a more risk-averse culture whereas employees are more likely to be penalized for failure rather than rewarded for performance. According to Gupta (2023), public companies struggle to keep up with the latest software and technology as an effect of working differently compared to typical businesses. The author further explains that public companies commonly are restrained by legal regulations, which prevents them from allocating resources and support to technologically develop. The fast change in market environments and an existent demand for digitalization requires companies to continuously adapt to stay relevant and competitive. Groover (2010) states that technologies and digitalization could be applicable in several different business areas. Digitalization can be seen as a tool to be used in different processes to ensure execution without any human involvement, which could result in higher efficiency and lower costs if used correctly.

De Mast (2006) states that companies should continuously work on improvements to make their processes more efficient and to secure long-term sustainable developments and success. One way of reaching efficiency long-term is to invest in digitalization. However, there are many obstacles and challenges with digitalization according to Henriette et al., (2015). Organizational prerequisites in terms of leadership support, investment, training, and skills development are required for successful digitalization (Morgan, 2019). However, the most critical prerequisite to successfully prepare for a digitalization is standardization (Wanichko, 2021; Klungseth, 2023). To obtain standardization and efficiency, Lean is a tool that can be used which aims to increase efficiency and reduce costs, hence also increasing the competitiveness of the business (Näslund, 2008).

The knowledge gap regarding digitalization for public companies is an area that needs to be investigated to create an understanding of drivers for digitalization as well as the required prerequisites. Gupta (2023) argues that this is a problematic area, which further needs to be highlighted for public companies to become efficient and establish sustainable development (Staniulienė & Lavickaitė, 2022; Zoltners et al., 2021; Gray & Rumpe, 2021).

1.3 Purpose and Aim

It is evident from the problem description that publicly owned companies struggle to succeed with organizational change initiatives, as well as struggling to keep up with technology. Moreover, it is prevalent that companies, no matter the kind or business situation, need to be competitive in terms of having high efficiency and to conduct a sustainable development which can be obtained through digitalization. Hence,

- The purpose of this study is to understand why public companies need to digitalize, and what should be considered when preparing for digitalization.
- The aim of the study is to gain a deep understanding of digitalization and public company's approach to it, as well as to map the current situation and develop recommendations for public companies in terms of how to proceed with a potential digitalization.

1.4 Research Questions

- What are the drivers for digitalization for public companies?
- What are the prerequisites for digitalization for public companies?

2 Theoretical Framework

This chapter presents the theoretical framework of the Master's thesis, in other words, the findings from the literature review. Before the findings are presented, the relationship between the research questions and the theoretical framework is presented. Then, literature findings on Sustainability and Digitalization are presented, which gives a generalized introduction to the areas as well as presents potential drivers. After that Organizational Prerequisites for Digitalization are presented, which relates to the chapter of Lean which is presented thereafter. Lastly, Change Management is presented.

2.1 Introduction to Theoretical Framework

The theoretical framework is described in the following chapter. It provides a basis for answering the research questions of the study. In Figure 1, the relationship between the research questions and the structure of the theoretical framework is described.

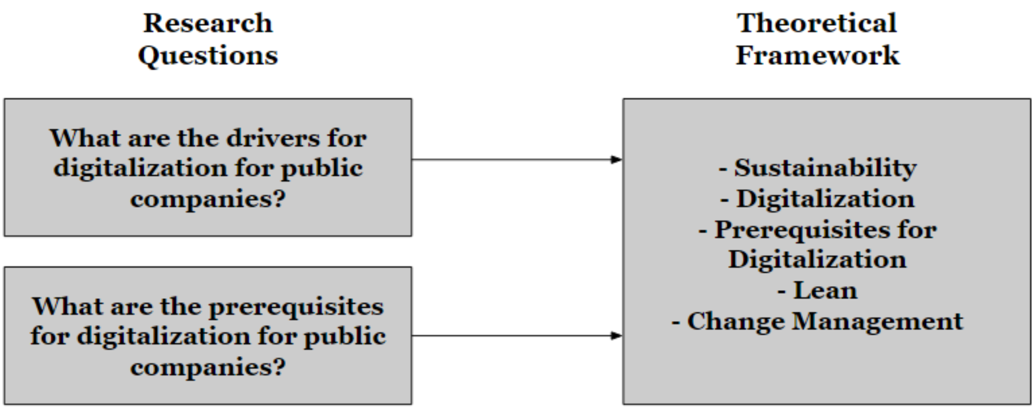

Figure 1, Relationship Between Research Questions and Theoretical Framework

2.2 Sustainability

According to Savitz (2013), a powerful way to approach sustainability is by understanding the concept of the TBL. The concept moves further from the traditional bottom line in terms of financial performance and includes the company's impact on the broader economy, the environment, and the society. In other words, the TBL measures the impact of a company's activities on the world (Savitz, 2013). Another perspective on the TBL is to consider the three aspects of people, planet, and profit (Fisk, 2010) as compared to economic, environmental, and social impact as described by Savitz (2013). According to the author, this perspective is easier to apply to business situations since it requires system thinking, and the understanding of *why* and *how* a company works (Fisk, 2010). A business that fails to include sustainability as one of its fundamentals and top priorities tends to receive considerable criticism from the public as well as lose market shares and legitimacy (Watson et al., 2010). According to a global survey executed in 2008, about 47% of organizations started to redesign their business models more based on sustainability (IBM, 2008). Meaning, out of the financial crisis the main focus for many was to invest in sustainable development. The companies started to consider sustainability as a new source of innovation and an opportunity for cutting costs and achieving competitive advantages which go under the concept of strategic sustainability (Sarkis & Rasheed, 1995; Watson et al., 2010). To continue with strategic sustainability, the main and central focus is the involvement of digitalization. As a start, digitalization is a crucial tool to assist organizations in handling their environmental issues. Digitalization is often the innovation that creates new products and designs that improve the overall sustainability of society and businesses (Watson et al., 2010).

2.3 Digitalization

2.3.1 Introduction

According to Vrana and Singh (2021), it is important to differentiate between digitization, digitalization, and digital transformation. Firstly, the authors simply describe digitization as the transition from analog to digital, which outlines the prerequisites for digitalization. Secondly, according to Almeida et al. (2020), digitalization is defined as the integration of digital and physical systems as well as the fusion of advanced technologies. Background-wise, the authors explain that before COVID-19, digitalization challenges were commonly referred to as the fourth industrial revolution in terms of Industry 4.0, the Internet of Things, and Web 4.0. The challenges were associated with the speed of digital transformation and the disruption of concepts and technologies. However, as an effect of the pandemic, these challenges were exposed, resulting in a sped-up digital transformation regardless of previous positioning or experience in the process. Additionally, Truant et al. (2021) describe digitalization as a growing phenomenon that impacts companies' processes, structure, and strategy. Gray and Rumpe (2015) state that digitalization is the actual use of digital technologies that are needed to change a business model. Digital technologies are used to increase the value of the business while providing new revenue opportunities, it is the process of moving from a manual handling state to a more digital business state. Thirdly, a digital transformation uses applications and digital infrastructure to accomplish new value-added chains and business models, hence requiring a process change (Vrana & Singh, 2021). Success factors for digitalization and increased efficiency can be divided into the categories of readiness, adoption, and sustainability. Correspondingly, the reasons for digitalization failure are divided into low impact, poor adoption, and slow progress (Zoltners et al., 2021).

2.3.2 Opportunities

It is further explained by Truant et al. (2021) that there are potential benefits of digitalization such as providing opportunities to improve the current value creation path, hence reconstructing the way business is created. Gray and Rumpe (2015) imply the same, in the business world digitalization can inform what, where, and why to buy and sell their products. Moreover, how a company can efficiently advertise, produce, and transport and how they can keep in contact with their clients and customers to maintain sustainability in a specific domain. Companies that implement digitalization capabilities and invest in technology in their businesses, tend to have better service delivery and customer integration. This has been shown in the increased value of their offering while simultaneously enhancing their long-term profitability (Adrodegari et al., 2017). Zhou et al. (2021) elaborate on this and state that digitalization can be an engine for process enhancements. Furthermore, that digitalization creates value for customers and the use of digital technology can improve overall personnel productivity which will end up with positive effects on the financial performance of the company. Investing in digitalization and replacing manual processes and paper with software allows businesses and organizations to automatically store and collect data which can be used to better understand cost drivers, risk, and process performances (Parviainen et al., 2017). Software and digitalization can provide businesses with real-time reports that can prevent problems before they become critical. (Markovitch & Wilmott, 2019; Sabbagh et al., 2012). Furthermore, digitalization can be used to obtain increased efficiency (Staniulienė & Lavickaitė, 2022; Zoltners et al., 2021). Hence, efficiency improvements can be expected across every dimension of the profit and loss statement in terms of increased revenue, reduced costs, and better risk management (Kortaba, 2017). Additionally, according to the author, investment in digital solutions is anticipated to deliver growth and cost efficiencies of 5-10% in the next three to five years.

2.3.3 Challenges

However, digitalization also comes with challenges. Truant et al. (2021) explain that the challenges of a digital transformation can occur in terms of understanding the relationship between financial performance and digitalization. This is an effect of digitalization investments often being significant, whilst the extent of digitalized implementation can vary between subsystems and processes. Hence, it is hard to understand the financial effect of digitalization from a holistic perspective (Truant et al., 2021).

Büchi et al. (2020) argue that there are several challenges and barriers to consider regarding the implementation of digital tools in a business and that it might come with a high cost. For instance, when moving over to a more digitalized state, the business needs to consider the human resource aspect of the change. These include the acquiring of new internal skills, competencies, and capabilities for the workers to be able to be a part of digitalization (Truant et al., 2021). Furthermore, Ficther (2019) describes change management as an essential factor for organizations to consider assuring successful digitalization as well as product or service innovation. The author further argues that modifications are required in terms of company vision, values, culture, and information management to assure implementational success. Additionally, according to Staniulienė and Lavickaitė (2022), it is crucial to use appropriate leadership when conducting a digital transformation. Attributes such as acting in an organized manner, being sociable, identifying problems, being team-oriented, and being flexible are considered essential to assure a successful digital transformation.

Finally, it is common for companies to struggle with digitalization. Many invest in new and interesting digital tools, but they tend to fail to move forward because they are unsuccessful in their strategic and organizational integration (Kohtamäki et al., 2020). To be able to achieve the positive benefits and results from a digital implementation, companies must work with incorporating the digital transitions through their strategies, business models, and organizational structure to achieve positive performance in both the short to long-term (Ricci et al., 2020).

2.4 Prerequisites for Digitalization

According to Henriette et al. (2015), there are many obstacles and challenges with a digital transformation. The authors explain that investing in digitalization is a major change in habits and ways of working which will affect the resources, operational processes, and both the internal and external users of the businesses. Respectively, to prepare the organization for a potential digital transformation, companies must organize themselves thereafter to create prerequisites for successful implementation (Morgan, 2019). The author mentions essential prerequisites which need to be considered for a successful digitalization journey in terms of investment and leadership support, standards and policies, as well as training and skills development.

It is important to understand the difference between standards and standardization. According to Wigmore (2016), standardization is the process of developing, promoting, and establishing standards within a given industry, commonly developed by standards organizations such as the International Organization for Standardization (ISO). A standard, however, is defined as a pattern or model that is generally accepted (Cambridge, 2023). According to Wanichko (2021), standardization is a critical prerequisite to successfully prepare for a digital transformation. The author describes that standardization provides simplicity to current organizational processes, which concludes in the same result for the same process every time. Additionally, Wanichko (2021) describes agility and flexibility as an obtainable benefits from standardization. The author emphasizes that this can be interpreted as contradictory, whereas standardization commonly results in the opposite of agility and flexibility. However, by standardizing and making a process easier to conduct and less resource-demanding, the author suggests that resources are freed which can be used on other work. Hence, increasing agility and flexibility from a holistic perspective. The author further argues that both benefits are key to simplifying the digital transformation process, which is commonly experienced as extensive and exhaustive. Moreover, standardization is described as a good first step towards digitalization. Whereas, standardization provides employees with the same system, and the same data, which both are necessary to obtain the same or similar results. As an effect of this, communication between teams and employees is likely to be improved and allow for easier identification of the root of problems, hence making them easier to solve (Wanichko, 2021).

Continuing upon the same argumentation as Wanichko (2021), Klungseth et al. (2023) describe standardization as a key to digital transformation. The authors also suggest that standardization can help organizations to achieve their sustainability goals. I.e., the ISO categorized and mapped their standards to guide and visualize different sustainability goals to support users to manage the respective challenges of these goals.

2.5 Lean

Lean is a powerful system that could be used to eliminate waste and create more efficient processes (Chaple et al., 2014). Näslund (2008) explains that Lean is applicable in all types of businesses and operations and the sole purpose of the principles of Lean is to increase the efficiency and decrease the costs of the organizations. The idea is that Lean will achieve this by cutting down on cycle times and identifying and eliminating non-value-adding activities. The aim is to achieve this without a negative impact on efficiency and it can be done by doing things right. Furthermore, Bjurström (2016) describes a four-step model to help an organization move in the right direction. Step one is focused on determining the long-term direction or vision of the company, step two emphasizes the understanding of the current state, and step three revolves around establishing the next state of the company in terms of a future and next state. Then, the current state is compared to the close future state to estimate potential obstacles and impediments to moving in the right direction. Lastly, an effort is put into tackling these impediments through experimentation and different methodologies to obtain an organizational improvement toward the long-term vision. Hence, the author emphasizes that a thorough understanding of the current state of the organization is essential to identify what works well, and what does not, and as an effect of this what can be improved (Bjurström, 2016).

2.5.1 Waste

One major part of Lean is the concept and elimination of waste, which is referred to as *muda*. The author King (2019) explains that waste is in general, something that is resource demanding that does not create any value for the businesses. Therefore, companies can only start to reduce their waste when they have identified the difference between value-creating activities and non-value-adding activities. There are several identified wastes within Lean:

- *Wait:* One of the most common wastes is wait. Wait is according to Petersson et al. (2015) seen as unused time and is created when the ongoing process cannot be continued because the wished prerequisites are not in place. Wait is often found in businesses when employees are waiting for information, material or instructions to continue their work (King, 2019). The author explains that wait is an obvious issue in many organizations, but many organizations believe that wait is necessary and therefore they tend not to address the waste.
- *Unnecessary movement:* this is another waste that does not add any value to the organization. Melton (2005) claims that waste includes all of the movement that does not directly aid the overall process within the business. The unnecessary movement can be exemplified by people having to move to collect information or send material.
- *Belabor:* When organizations execute extra work that does not add any value to the end customer, it is called belabor. Belabor is a common waste when companies offer services that are of higher quality or effort than what is requested (Petersson et al., 2015).

- *Problems in processes:* this can lead to reworking and extra work, which can be a significant strain on the organization's energy, time, and resources. Resulting in an inefficient use of resources and time within a business.
- *Unused competence:* Petersson et al. (2015) claim that *unused competence* is referring to the inability of a business to use the existing competence within the organization to develop. Liker (2009) follows this by explaining that it is crucial for an organization to listen to their employees, if not, they risk missing out on improvement opportunities, valuable ideas, and other competencies. Therefore, it is important to include the employees and embrace their commitment to improve the overall result and decrease the waste of unused competence.

2.5.2 Standardized Work

One of the principles within Lean is standardized work. Standardization is according to Petersson et al. (2015) defined as the most appropriate and beneficial way to execute a specific working task. King (2019) states that the standard should be followed until the time comes when a better way of executing the task is identified, this new way of working should then also become the new standard. By working by standards, everyone is doing a specific task in the same manner, which eliminates the risks of achieving different types of results, and standardization allows a higher quality efficiency. Standardization helps by identifying discrepancies and by creating predictability and learning within an organization (Petersson et al., 2015). Furthermore, the authors explain that with an agreed standard, an organization can create and define what should be seen as a normal state regarding its operations. If a normal state is not created, it is incredibly challenging to understand when the state is not normal. Thereby, standardization is an important part of identifying discrepancies and wastes whilst it can also create predictable flows, which demand fewer resources than unpredictable flows.

2.5.3 Value-Stream-Mapping

Value stream mapping (VSM) is another tool and principle within Lean. The purpose of VSM is according to Womack & Jones (1994) to analyze and map out different activities in the processes within organizations to understand the current state to identify where waste is present. When executing improvement work, a VSM is proven useful to analyze not just specific parts of the processes, but rather to analyze and investigate the processes. Therefore, it is easier to navigate between which activities are contributing and to create a more complete overview of the flow (Rother & Shook, 2003). Worley & Doolen (2006) state that the value flow is all the total activities needed to finalize a product or a service. The thought is to analyze which activities that are contributing value and which activities that are not adding any value, hence which are waste. Companies that implement Lean to improve their processes can reduce their total waste by up to 40% according to Bhasin and Burcher (2006). Following, Jones et al. (1997) explain that it is often not more than 10% of the activities in total that are value-adding to the operations. The authors also claim that around 60% of the activities within a general company don’t add any value at all. Finally, the use of a VSM can be divided into three steps (Pirasteh & Fox, 2011). The first one is to create a VSM to understand and map out the different activities and analyze the current state. Step two aims to weather relevant information on what affects the value flow, for instance, looking at resources, time, different responsibilities, etc. The last step is to create a future map with the purpose of understanding what the improvement work should result in.

2.5.4 The Practice of 5S

To compete in a dynamic and technological world, organizations must make the most appropriate decisions and choose the best possible methods to advance on opportunities that arise according to Singh et al. (2014). To succeed with this, the authors claim that it is crucial to evaluate the quality of the performance of the organization. One way of improving the performance and helping organize the entire system is by using 5S, which originates from Japan. The initial idea of the concept is to improve the aspects of safety and efficiency within a specific workplace, while simultaneously decreasing the defects rate of the products or services. 5s is divided into five words: Sort, Set in order, Shine, Standardize, and Sustain are described by Kumar et al. (2022) below.

- *Sort*: keeping only necessary items in the workplace. The process requires effort from the organization as well as self-discipline to succeed.
- *Set in order*: arranging items to promote efficient workflow. Emphasizes maximization of ease of location through prioritization of the necessity and importance of equipment.
- *Shine*: cleanliness of the workplace emphasizes cleanliness, self-inspection and creating a faultless workplace.
- *Standardize*: setting standards for a consistently organized workplace. Emphasizes implementing standard operating procedures to improve the established workplace practices.
- *Sustain*: the purpose of this “s” is to sustain all the previous “s”. It is determined to be critical to implement and understand since it requires changes in the behavior of employees at all levels within an organization.

Moreover, according to Peterka (2008), it is a common misconception that 5s is applicable to manufacturing companies only. This argument is built upon the fact that the service-based sector is different from the manufacturing-based sector in terms of difficulties in recognizing what constituents a process, and as an effect of this has a harder time observing, measuring, and recording a process. However, through small adjustments, the author argues that there are great opportunities to be reaped from implementing 5S in a service-based company. It is suggested to use SIPOC, which stands for supplier, input, process, output, and customer. The purpose of using this abbreviation is to help service-based organizations to identify what the process consists of. By identifying the SIOC, what remains should constitute the process, and this is the area where 5S can be implemented (Peterka, 2008).

2.6 Change Management

Change management is defined as “the process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers” (Moran & Brightman, 2001). Additionally, organizational change is described as a difference in state, quality, or form over time in an organizational entity. Whereas an organizational entity can treat the overall organization, a subunit within the organization, an individual's job, or an organization's relationship with other organizations (Van de Ven & Poole, 1995). According to Kotter (2007), most organizational change efforts fail. The author further explains that if the change initiative is divided into a series of phases that last for a considerable amount of time, the chance of success increases. Building upon this argument, Kotter (2007) developed a step-by-step framework built upon eight mistakes to avoid during organizational change and further argued that a critical mistake in any of these can have a negative impact on the organizational change from a holistic perspective. The eight mistakes are described by the author as eight steps and visualized in Figure 2.

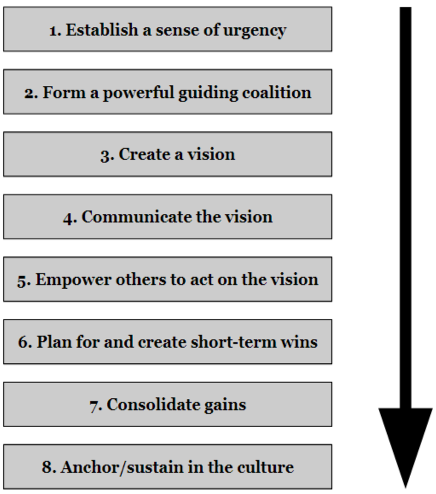

Figure 2, Kotter’s Eight Steps for successful organizational change

According to Kotter (2007), the first step emphasizes the need to establish a compelling need for change and to communicate it to the organization effectively. The second step describes the need to form a team of preferably influential individuals who can drive the change effort forwards. The third step explains the need to develop a clear vision for the change effort, and additionally, a comprehensive strategy to achieve it. The fourth step emphasizes the importance of communicating of the vision and its corresponding strategy to ensure that all stakeholders understand the purpose and direction of the change. The fifth step is about delegating responsibility to employees within the organization to make the change happen. The sixth step describes the importance of generating quick and visible results that show progress to build momentum for the change effort. The seventh step builds upon the reasoning of using the momentum gained in the previous step to tackle more significant and complex challenges. Lastly, the eighth step emphasizes the importance of anchoring and embedding the completed changes into the culture of the organization to make sure that they become permanent.

3 Research Methodology

In this chapter, the research methodology of the Master's thesis is presented. At first, the relationship between the research questions and methodology is presented, followed by a summarization of the work process. Secondly, the research strategy and research design are outlined. Then, the chosen data collection methods are presented, followed by data analysis. Lastly, research quality and ethical considerations are presented.

3.1 Introduction to Methodology

3.1.1 The Relationship between Research Questions and Methodology

In the following chapters methods for the data collection and data analysis are described which were used to answer the research questions of the study. Moreover, Figure 3 describes the relationship between the research questions and the methodology of the study.

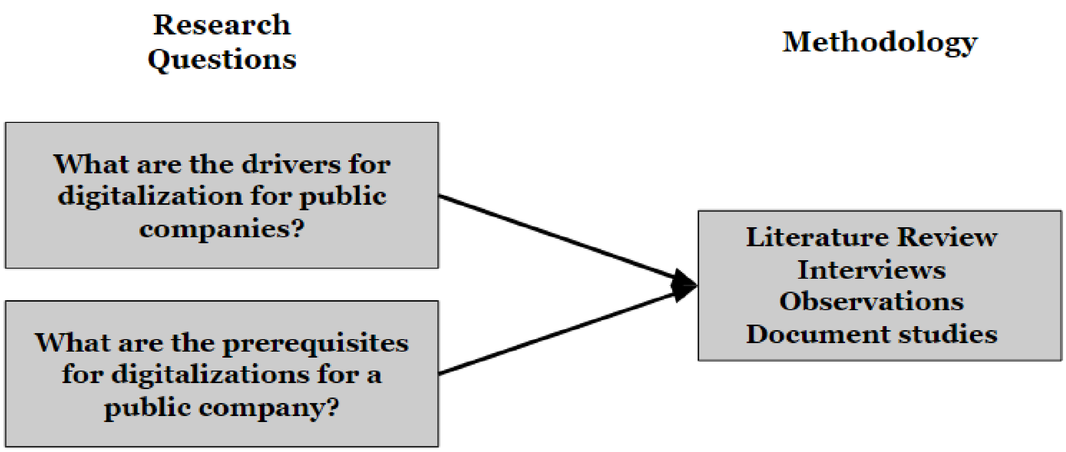

Figure 3, The Relationship Between Research Questions and Methodology

To answer the first research question, a literature review, interviews, observations, and a document analysis were conducted. A literature review was conducted to understand the drivers for digitalization from a theoretical and generalized perspective, whilst interviews, observations, and document studies provided data in terms of the practical drivers in terms of Västtrafik. Moreover, to answer the second research question, the approach was conducted. A literature review to obtain theoretical and general data, and interviews, observations, and document studies to obtain practical data from Västtrafik.

3.1.2 The Work Process

The working process started with a digital meeting with the supervisor of Västtrafik where the issue regarding digitalization was mentioned. Thereafter, several meetings were held with the supervisor and other relevant people from Västtrafik to establish a specific topic to investigate more in-depth. After the topic was decided, the process of establishing research questions and a purpose for the study was initiated. Furthermore, the writing of the report continued with formulating the problem of the study and starting to investigate different areas of theory that could be interesting to include as a fundament in the research. Parallel to the collection of theory, the collection of data began in the form of interviews, observations, literature studies, and document studies. The data collection was held open with the intention of being reserved to the possibility of being flexible to potential changes that could be necessary during the process of the work. This is strengthened by Yin (2007) who claims that researchers need to be responsive to changing their plan and establishing other approaches to collect their data to be successful in their way of working. Finally, when the data was collected it was put in relation to the gathered theory which then formed the analysis, discussion, and conclusion.

3.2 Research Strategy

According to Bell et al. (2022), a research strategy revolves around the general orientation to the conduct of business research. Additionally, the research strategy shall clearly explain the overall strategy of how the research questions should be answered (Saunders et al., 2016). Research methods can be divided into qualitative or quantitative methods, whereas qualitative is based on spoken and written words rather than numbers, and quantitative is the opposite. Furthermore, a qualitative approach is suitable when trying to address complex research areas to capture several individuals' perspectives. As an effect of this, it was considered a suitable method whereas the study is based on data from interviews, observations, and organizational documents (Bell et al., 2022).

According to Säfsten and Gustavsson (2019), the relationship between theory and empirical data can be distinguished as either induction, deduction, or abduction. An abductive approach is often used when the researchers need to go back and forth between theory and empirical data, as an effect of a limited preunderstanding of the research subject. Hence, an abductive approach was used in this study since it can be determined as more flexible than both induction and deduction where the authors start from either theory or empirical data to later move on to the other (Bell et al., 2022), as well as a limited preunderstanding of the research subject. For example, an inductive approach was used to obtain theory regarding general information of digitalization, whereas organizational prerequisites were found through a deductive approach.

3.3 Research Design

In addition to the research strategy, a research design has been chosen to explain the execution of the research in terms of a framework for collecting and analyzing data that suits the corresponding research questions accordingly. According to Bell et al. (2022), different research designs can be used to execute a study, whereas a case study is the most prevalent one. The study was determined to be a case study, which is a qualitative study of one or more cases applicable in situations where the researcher aspires to obtain a deep understanding of a situation or happening. Additionally, a case study is suitable when the questions of how, why, and what needs to be answered (Säfsten & Gustavsson, 2019). The study was limited to a single case study, and not a multiple case study as an effect of time limitation. This aligns with the research questions whereas both revolve around why and what. The research design is visualized in Figure 4 and has been divided into three project phases in terms of an initiation phase, a data collection phase, and a project finalization phase.

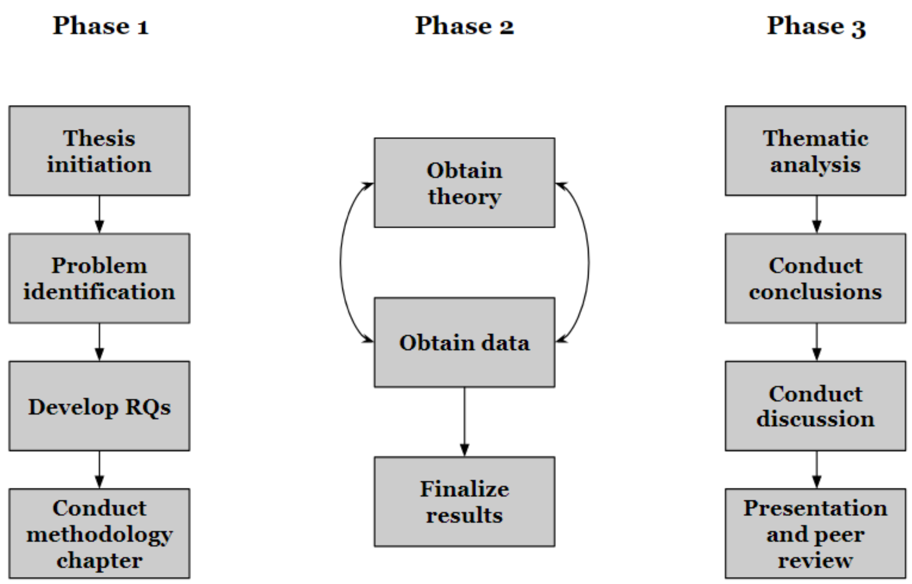

Figure 4, Research Design

3.4 Literature Review

According to Bell et al., (2011), the purpose of a literature review is to obtain relevant literature and theories of the research area. A comprehensive theoretical background will create the prerequisites necessary to conduct a thorough analysis as well as an understanding of the chosen research area. To be able to find more in-depth and relevant information for the study, the literature review included looking up the references to the reference (Bell & Bryman, 2011). In this study, several reports and books were reviewed, in areas like sustainability, digitalization, Lean, and change management to obtain concrete knowledge to answer the research questions. The main database used for identifying key literature was Chalmers Library, but also Google Scholar, where peer-reviewed articles constitute most of the theoretical framework.

3.5 Data Collection

Primary- and secondary sources will be used during the gathering of data to answer the purpose and research questions of the study. What separates primary sources from secondary sources is the closeness to the information provider. Patel and Davidson (2011) define primary sources as first-hand reports and eyewitness accounts while the other sources are seen as secondary sources. Therefore, in this study, interviews and observations will be considered primary data, while literature- and documents studies are considered secondary data. The study aims to treat the process of standard agreements between Västtrafik and its service providers; hence no other areas will be included in the data collection. The ownership of the studied process in this study lies at Västtrafik, hence the scope of the thesis was limited to activities regarding Västtrafik only. Later, in the results, an organization chart is presented, whereas the different business units are visualized. All of the data collection in terms of Västtrafik was obtained from business unit 1, whereas the work in this function was determined to most relevant for the thesis. In Table 1, all the conducted interviews and observations are presented. In total, nine interview moments and six observations were conducted.

Table 1, Conducted Interviews and Observations

Type:	**Date:**	**Role:**	**Time:**	**Place:**
Interview	23/2-23	Business Manager Unit 1	1h	Online
Interview and observation	23/2-23	Business Developer	1h	Present
Interview	1/3-23	Operations Manager IT	1h	Present
Interview and observation	2/3-23	Business Coordinator	2h	Present
Interview and observation	3/3-23	Controller	1h	Present
Interview and observation	9/3-23	Operations Manager IT	2h	Present
Interview and observation	9/3-23	Business Developer	1,5h	Present
Interview and Observation	9/3-23	Controller	1h	Present
Interview	14/4-23	Operations Manager IT, Business Developer, Business Manager Unit 1	1,5h	Present
Interview	24/4-23	Business Developer, Business Manager Unit 1	1h	Online

3.5.1 Interviews

According to Yin (2007), the purpose of conducting interviews is to gather relevant information on how the processes are executed, what kind of areas are functioning, and which areas are in desperate need of improvement. Interviews are a targeted data-gathering method that often focuses directly on the research questions of the case study as well as complementing with essential insights and experienced casual connections. The purpose of executing the interviews was to collect information about the current state of the manual processes and their challenges in relation to the research questions. Interviews constituted the majority of the data collection to assess Västtrafik's current methods of working. Furthermore, it was seen as important to involve and take the employees' perspectives and thoughts into account regarding the case and therefore the interviews were chosen as one of the primary data collections during the study. The interviews were documented

through notes that were taken during the interviews, where one of the researchers conducted the interview and the other documented the sayings and answers of the respondent. Interviews have been carried out both in person and remotely with relevant people who provided valuable information within their area of expertise.
Blomkvist & Hallin (2014) explains that there are two different types of interviews:

- Qualitative interview is an unstructured or semi structured type of interview. Meaning that the questions and results are not decided by the researcher in advance and that the questions are more circling around a subject that is supposed to be investigated.
- Quantitative interview, which is a structured interview. That means that the interview is conducted in a stricter type of manner with the purpose of achieving a specific result.

All the interviews have been conducted as semi-structured with a low degree of standardization, where the researchers prepared some areas for the discussion with the purpose of adapting the questions after every respondent while also maintaining maximal space for a developed answer (Patel & Davidson, 2011). This type of openness was seen as important during the interviews to be able to create a thorough understanding of the situation of the problems in their real context. The respondents could thereby develop their answers without any limitations and explain their points of view.

Interviews of an open character often include the key persons giving both facts- and opinion-based answers as well as their own assumptions and ideas about a certain situation (Yin, 2007). The respondent can then also contribute with suggestions of where additional information can be found and other relevant persons that could be interviewed. In terms of selecting appropriate individuals, and an appropriate number of individuals to interview, Säfsten and Gustavsson (2019) describe that selection is an appropriate method to use. The two methods of selection are described by the authors as random or non-random, whereas a non-random selection has been used in this study to assure that reliability in the study is assured by only interviewing relevant people. These are determined together with the project supervisor to assure that relevant data is collected to answer the research questions.

3.5.2 Observations & Document Studies

Observations are suitable when there is a need to observe and document what happens within an organization, and how the flow of information and documents is processed within the operations (Blomkvist & Hallin, 2014). Additionally, the authors distinguish observations in terms of first grade and second-grade observations, and further recommend the researcher to always strive after first-grade observations. First-grade observations refer to observations that can be verified by others, while second grade refers to a subjective interpretation that others might not agree upon. To obtain an overview and understanding of these processes, observations will be conducted. The observations will be conducted during the whole research process, which stretches both other work procedures as well as organizational documents (Blomkvist & Hallin, 2014).

Furthermore, document analysis is described by Yin (2007) to be an important part of the data collection. Documents tend to be a reliable source considering that they can be analyzed several different times and are not created with the purpose of the study. Thereby, the documents can be objective and discrete. The documents that were collected from Västtrafik were standard agreements that were created for Västtrafik and its service providers. Whereas in this study, one of Västtrafik's standard agreements where analyzed, which was suggested by Västtrafik themselves. These documents explain the professional relationship between the two parts and how they are dependent on one another. Additionally, according to Bowen (2009), document analysis is a qualitative data analysis method that requires the researchers to be systematic. The author further explains that a document analysis is conducted with the purpose of gaining an understanding to develop critical empirical knowledge of the studied case.

To understand the current work process of the standard agreements, confirm the data from the interviews, and further identify drivers and prerequisites for digitalization, a document analysis was conducted. Therefore, a document analysis was seen as essential for this study to understand the work process and the relationship between Västtrafik and the service provider. The document analysis was based on frequency tables of the four main aspects of the standard agreements, which were identified through interviews and observations. These were *responsible for*, *requirements, bonuses,* and *penalty fees.*

3.6 Data Analysis

The entire study is anticipated to be executed according to a qualitative nature. The gathering of the qualitative data will be held out in an exploratory manner with the purpose of collecting as much information as possible to contribute to the study. Patel and Davidson (2011) explain that what differs the processing of qualitative data from quantitative data is that qualitative data can be processed during the gathering of information which is not possible to the same extent as quantitative data. According to Säfsten and Gustavsson (2019), analysis of qualitative data consists of data presented in a way that creates prerequisites for analysis, systematically ordered data, the search for connections and patterns, and lastly conclusions. Furthermore, a study of this type requires an analysis that is focused on meaning and signification. Hence, a thematic analysis was used which is described as a method to describe a complete data material or specific phenomenon according to the research questions of the study. Braun and Clarke (2006) provide a framework consisting of six phases that will be used to conduct the analysis, which is presented in Figure 5.

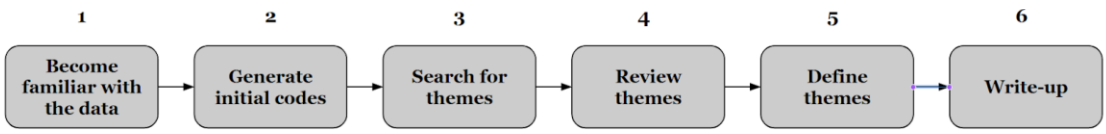

Figure 5, Six Phases of Thematic Analysis

3.7 Research Quality

3.7.1 Validity

The research quality of this study can be determined from four different quality criteria: content validity, external validity, internal validity, as well as reliability. The different criteria are presented in terms of definition and application in Table 2, and further developed thereafter.

Table 2, Quality Criteria

Quality Criteria	Definition	Application
Content validity	Concerns how well the collected data represents the studied case	Method Triangulation Data Triangulation
Internal Validity	Concerns how well-determined the conclusions of the study are	Pattern matching
External Validity	Concerns the generalizability of the study	Putting collected data in relation to the theoretical framework
Reliability	Concerns the repeatability of the study	Well documented working process

The validity of a study is decided by whether the study investigates which is supposed to be investigated (Patel & Davidson, 2011). There are several different types and aspects of validity, two of the most important are internal validity and external validity. Internal validity refers to how well the conclusions of the study are and thereby trying to apply the conclusions of the study to previous patterns. Whilst external validity refers to the generalizability of the study and how well the gathered empirics can be applied to theories within the specific subject.

The content validity of a study is first and foremost affected by the collection of data but also during and regarding the compilation of the report. Yin (2007) explains that the aim of content validity is that the research of content should consist of an objective collection of data as well as that it should represent and reflect what is supposed to be investigated. Therefore, it is important that it is clearly decided what is supposed to be measured and that it is during the investigation also measured that what is investigated is what is supposed to be investigated. To increase the strength of the content validity, the researchers collected empirics with the help of several methods and thereafter gathered the empirics and compiled them against each other. With the purpose of ensuring that the different data-collecting methods showed the same result which is called triangulation (Yin, 2007). The aim for using triangulation during the research was to create a comprehensive and as correct picture as possible of the current state. Furthermore, data triangulation was applied to compare the different sources against each other to validate the given information. Data triangulation helps by validating certain information from several different sources which increases the quality of the study (Yin, 2007). All the gathered data was presented to key persons within the company's operations to validate the data. By controlling the data with people within the daily operations the quality of the study could be increased (Yin, 2007). Patel and Davidson (2011) named this approach for communicative validity which was strengthened by the fact that the respondents in the study themselves were involved in the results from the data collection and given the opportunity to bring feedback back to the scientist to state if their anticipations were reasonable. The feedback contributed to the validation of the objectivity in the study and became a receipt of if the researchers succeeded in keeping their own emotions and opinions.

Yin (2007) that external validity is a criterion assuring that the result of the study can be generalized, which means that the result of the study should be applicable to other cases and not just this specific case study. To strengthen the external validity of the study, the results of the investigation were linked to theories within the specific areas.

Internal validity is touching upon the more analyzing part of a certain work and is about how well-grounded the conclusions of a study are. Pattern matching was used to increase the strength of the internal validity of the study, which means that patterns within the empirics were compared to patterns within the theoretical framework. Conformity within the patterns from empirics and theory demonstrates well-founded conclusions and is therefore a sign of internal validity within the study (Yin, 2007)

3.7.2 Reliability

Patel and Davidson (2011) state that reliability means that the investigation is done in a reliable way and that the measuring instruments resist different types of random hits. More in-depth it could be explained that another investigator should be able to follow the exact same approach and reach the same result (Yin, 2007). During the interviews, both researchers will take part which will, according to Patel and Davidson (2011), strengthen the reliability of the study. With two researchers it is easier for one of the researchers to focus on the interview itself while the other can focus on documenting, registering, and taking notes of the data. Additionally, the one taking notes could also observe the min game and reaction of the interviewees. The interviews will constitute most of the data collection, and reliability was assured by good communication between the researchers and the respondent after the respective interviews in terms of assuring that the collected data was correctly documented and interpreted.

3.8 Ethical considerations

There are several different challenges to take into consideration when conducting a case study and/or business research. Bell et al. (2019) state that there are four main ethical principles to consider, these are lack of consent, invasion of privacy, deception, and harm. To avoid the issue of lack of consent, the researchers provided clear information about the purpose of the research and what the research is about in advance to each respondent within the study. That also provided an opportunity for the respondents to ask questions in advance and prepare themselves, accordingly, hence contributing to a suitable interview for the respondents as well as the researchers. Additionally, the same reasoning goes for avoiding deception within the study, by constantly being open and transparent towards the people involved, deception will be avoided. Following, the interview answers were presented in an anonymous manner, and the questions were reviewed carefully to protect the privacy of the respondents. Lastly, to avoid harming the respondents, the results were used for this research only. There is no intent of disclosing any information which potentially could impact the relationship between employees as well as future employers in a negative manner. Throughout the process of conducting this study, no ethical considerations were considered violated, whereas the data collection was conducted in a suitable manner according to the respondents and Västtrafik.

4 Results

In this chapter, findings from Västtrafik are presented. It starts with a general description of Västtrafik in terms of what they are doing and how they do it. A simplified value stream map is conducted to describe the current work process and which process step is currently described as problematic. Then, data from interviews are presented in terms of the research questions. Lastly, a document analysis is presented of Västtrafik's standard agreements, which is based on observations.

4.1 The Case Company

4.1.1 General Information

The case study was conducted at Västtrafik which is a big Swedish public transport company to answer the research questions and fulfill the purpose and aim of the study. Västtrafik is a public company, which operates on behalf of the Västra Götalandsregionen. The company works in a non-profit manner, and as an effect of providing public transport, one of their most important goals is to achieve high sustainability. Moreover, the organization follows a hierarchy that is divided into different functions according to Figure 6. The reasoning behind this choice of the organizational hierarchy is the standard agreements, which is the foundation of providing the service to Västtrafik's customers. Västtrafik is a service-based business that does not provide services in-house. But rather by contracting and outsourcing its services in terms of public transport by renting vehicles and providing transport for its customers via different service providers. The process for contracting is conducted according to the company's standard agreements, which basically is a template of a contract that includes desirable aspects in terms of certain what to expect from each other to provide the service successfully. Västtrafik economically compensates the service provider according to how well they follow the standard agreement and correspondingly provide services. A follow-up report from the service provider is conducted monthly, where the provider themself has the responsibility of reporting how many services they have provided. Västtrafik is currently investigating the possibility of digitalizing the standard agreement process, to obtain increased efficiency and sustainability in terms of fewer manual steps and less demand for resources.

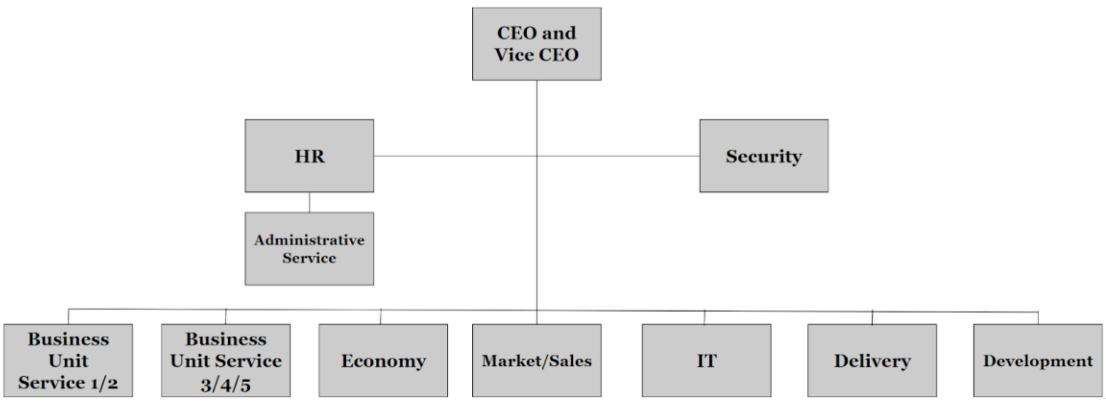

Figure 6, Organizational Map

4.1.2 The Process of Standard Agreements

According to the interviewees and through observations, the initial thought in terms of the standard agreement is to describe, structure, and pinpoint the relationship between Västtrafik and the service provider and further provide information on what can be expected from each other. The standard agreements are conducted in a structured way with the purpose of explaining how each party is expected to behave and what they are expected to deliver to one another. Moreover, the overall intention is to divide the requirements, responsibilities, and economic aspects between the parties within the standard agreement. These are prevalent in different chapters, whereas the chapters in the standard agreement are:

1. Parties
2. Background
3. Scope of service undertaking
4. Agreement construction and content
5. Fulfillment of overall goals
6. General prerequisites
7. Content of service commitment
8. Demands and follow-up process
9. Times
10. Expected service volumes and volume changes
11. Economic compensation
12. Bonuses
13. Terms and conditions
14. Signatures

The average standard agreement consists of 14 chapters and 36 pages. Every one of the chapters includes several sub-chapters that describe different demands between the parties. Additionally, references to attachments as well as laws are prevalent within these chapters, resulting in more than 36 pages to manage. Most of the standard agreement describes potential economic compensation in terms of services provided, if they are provided correctly, as well as potential penalties if they are not. A simplified VSM of the standard agreement process is visualized in Figure 7. According to the interviewees, waste in terms of time and wait is prevalent between steps 1 and step 2, but mostly between steps 3 and step 4.

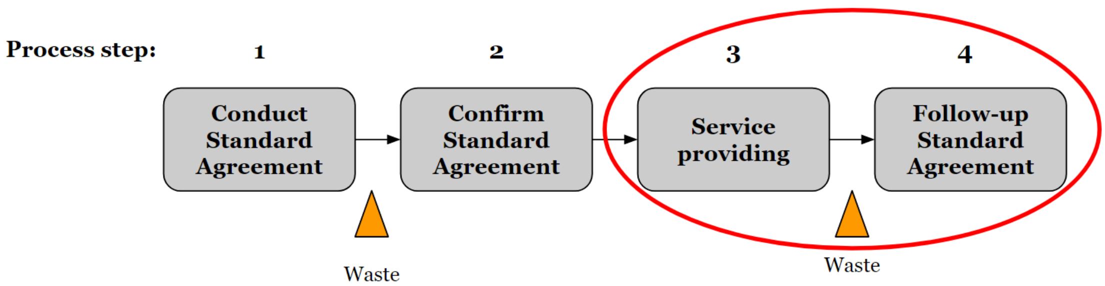

Figure 7, VSM of Standard Agreements

To give an example of what the waste looks like, between step 3 and step 4, Figure 8 is visualized below which describes the flow of information between Västtrafik and the service provider.

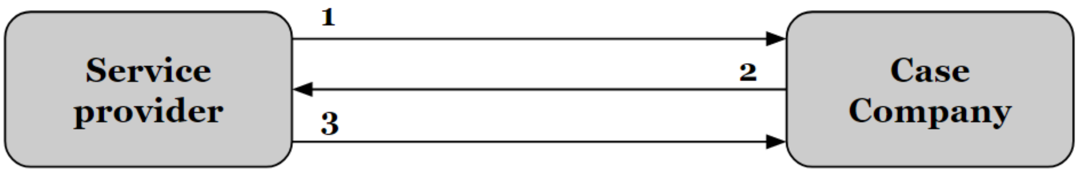

Figure 8, The information flow between steps 3 and 4

The first information flow in this visualization (1), consists of a monthly report from the service provider to Västtrafik containing what parts of the model agreement they have followed to receive payments, but also what parts they have not followed and should be penalized for. The second information flow (2) consists of a revision of the monthly report by Västtrafik. In this revision, the economic aspects of the standard agreement are double-checked by Västtrafik, whereas both the number of services is ensured as well as if the sum for payments and penalties is correct in terms of what is stated in the standard agreement. Lastly, the third information flow (3), consists of the service provider agreeing upon the revised version of the monthly report. In summary, according to the respondents, this flow and exchange of information is extensive and very resource demanding. One of the respondents said:

"I believe digitalization can help reduce waste in all parts of the standard agreement process. Mostly however in these last steps, today this process is a chaotic and exhaustive dialogue which is like a monthly negotiation with the service provider."

4.2 Drivers for Digitalization

To answer the first research question: "What are the drivers for digitalization for public companies?" interviews were conducted to understand the current situation at Västtrafik. The interview answers in this section revolve around what the current problems are, and why Västtrafik needs to digitalize. There is a consensus within Västtrafik that there is a need for digitalization in general, but especially for the standard agreements and relevant sub-parts since this process is determined to be very **resource demanding,** which is the first driver. This driver relates to their goal of increasing their sustainability. Moreover, the **conduction** of the standard agreements is described by the interviewees as unnecessarily complicated. One respondent explicitly described the process as:

"Some standard agreements are conducted manually through conversations and meetings, and then signed by relevant employees at Västtrafik paper by paper, to later be mailed physically to the other party for more signatures."

Moreover, in terms of **navigating** and **following up** on the standard agreements, there is a described problem in determining what parts of the standard agreements are requirements that are to be followed by the service providers. Hence potentially creating trouble to understand the standard agreement to full terms, both for Västtrafik as well as the service provider. Additionally, the follow-up process of the standard agreements is described as not automated, resulting in the process requiring heavy resources to conduct. Furthermore, the standard agreements usually come with a high number of attachments and updates. Regarding the current state of the standard agreements, several respondents said:

“Understanding the current state of the standard agreement as well as navigating through the different files is highly problematic.”

Furthermore, the respondents describe **areas of responsibility** as a problem in terms of knowing what functions or employees are responsible for the follow-up of certain standard agreement requirements. For example, certain requirements are not covered by the work procedures of different organizational functions. Additionally, agreement content in terms of responsibility and requirements are currently lacking, whereas both Västtrafik and the service providers frequently are not sure of what needs to be strictly followed, and vice versa according to the interviewees. A consequence of this appears in the follow-up process. According to the respondents, if Västtrafik is not sure what parameters in the standard agreements the service providers must follow, creating an ambiguity in terms of knowing when to penalize the service provider, or respectively give them bonuses. Lastly, according to the respondents, too much responsibility of the follow-up process is managed by the service providers themselves. Resulting in Västtrafik experiencing a **loss of control** and not being sure if the numbers reported monthly and weekly by the services providers are right. This is described by one of the respondents:

4.3 Prerequisites for Digitalization

To answer the second research question: “What are the prerequisites for digitalization for a public company? “ Interviews were conducted as well. To be clear, the interview answers in this section revolve around the prerequisites which Västtrafik determines lack to prepare for digitalization. The respondents describe their organizational prerequisites for a potential digitalization as problematic, where most of the staff has fully booked calendars with meetings. This results in the employees barely having space to breathe, which makes it hard to conduct any type of organizational change initiative at all. Hence, the respondents described their digitalization journey as slow, where there has been an interest in digitalizing for a while, but the fact that the organization **cannot allocate resources** for it has slowed down the process. The common opinion is that they feel that they need to free up space and prepare before they can take their next steps towards a change or a potential digitalization. Moreover, several respondents describe **resistance to change** initiatives. I.e., if a potential digitalization is mentioned, employees act through a change of fear based upon the opinion that the work process is sufficient as of today.

“We do not have prerequisites to take a step towards digitalization. There are no existing resources for it, and there exists a persistent resistance for change initiatives which complicates things.”

According to the respondents, the results of the standard agreements differ a lot as an effect of the process being conducted differently for different service providers. As described before, there is a need to free up resources to prepare for and conduct any type of change initiative within Västtrafik. Some respondents explicitly describe the **need to standardize** the standard agreement to create prerequisites for potential digitalization because the current process is very inefficient.

“A natural first step would be to standardize the standard agreements to make the conduction, navigation, and follow-up process more efficient in order to free up resources for a potential digitalization.”

4.4 Summarization of Drivers and Prerequisites

The collected data can be divided into drivers as to why the organization needs to digitalize, and prerequisites as to what currently hinders them from digitalizing, see Table 3.

Table 3, Summarization of Drivers and Prerequisites

Drivers	Resource demanding process	Difficulties in conducting/navigating/following up the process	Unclear responsibilities /loss of control
Prerequisites	Restrained resources	Resistance to change	Need to standardize

4.5 Document Analysis of Standard Agreement

4.5.1 Introduction

It is evident from the interviews that Västtrafik possesses certain drivers for digitalization, but currently lacks prerequisites to conduct it. To understand the current process of the standard agreement and how it’s managed, a document analysis was conducted. Additionally, the purpose of the document analysis was to understand the challenges of the process regarding the standard agreements. Thereafter, possibly validate if the results from interviews and observations correspond to the results from the document analysis. For example, there is a possibility of subjectivity in the results from interviews, whereas by conducting a document analysis the researchers dived into the actual process of standard agreements, in order to validate the previous data.

According to the interviewees, standard agreements are conducted between two parties to include areas of responsibility, requirements, payments, and penalties. The purpose of these aspects is to eliminate uncertainties about what each party is responsible for, what and when payments should occur, and when a party should be penalized. For Västtrafik, these aspects are prevalent in terms of *responsible for, requirements, bonuses, and penalty fees*, whereas some appeal to the service provider and some to Västtrafik. However, according to the interviewees, there is extensive uncertainty regarding these aspects which creates several problems for Västtrafik. The respondents suggest that the problem does not lie in whether these aspects are included in the standard agreement or not, but rather in how they are presented to the reader in an inconclusive and non-standardized way which potentially obstructs digitalization. Moreover, according to the respondents, the content of the agreements is very hard to obtain as an effect of the standard agreements being updated frequently and there is no way of assuring the current state.

Firstly, frequency tables were created to understand how common some of these aspects are, and what party they apply to. Secondly, the content of each aspect was analyzed in terms of the degree of standardization and degree of ambiguity. Lastly, a summarization of the problems identified for each aspect and their corresponding consequences was conducted. An example of each of these aspects is provided in the bullet list below:

- *Responsible for*:
    - Definition: Describes what party is responsible for what. These are commonly not very specified and are therefore not a basis for penalty fees.
    - Example: “The service provider is responsible for follow-up and acts upon customer insights”.
- *Requirements*:
    - Definition: Something that is a demanded requirement for a party, which is most commonly very specific. Hence, it is a basis for penalty fees.
    - Example: “The service provider shall be a company with experience and competence to conduct the service which Västtrafik has ordered.
- *Bonus*:
    - Definition: A sum of money that is paid from Västtrafik to the service provider if certain goals mentioned in the agreement are overcome.
    - Example: “Bonuses are paid to the service provider yearly. I.e., in terms of customer satisfaction and validation degrees, whereas a higher percentage results in higher bonuses.”
- *Penalty fee*:
    - Definition: A sum of money that is to be paid from the service provider to Västtrafik as a consequence of not following one or many of the demanded requirements.
    - Example: “A penalty fee is issued to the service provider every time a service is totally or partly canceled during a time period”.

4.5.2 Analysis of Responsible for

According to Table 4, in terms of *responsible for*, 14 of these apply to the service provider and 5 of them to Västtrafik. Additionally, approximately 75% of the *responsible for* applies to the service provider, which is fully natural considering that Västtrafik is the facilitator of this partnership.

Table 4, Responsible For in Standard Agreements

	Service Provider	**Case Company**
Chapter 6	2	4
Chapter 7	9	1
Chapter 8	3	0
Total	**14**	**5**
Total %	**73,7%**	**26.3%**

The initial thought in terms of *responsible for*, is to divide several tasks in the standard agreement between the service provider and Västtrafik, which is done extensively. The problem lies in the specification of the task which is often not detailed enough to understand exactly what needs to be done, resulting in a gray zone of what party is responsible for what. The issue comes at hand when a problem arises, and the two different parties need to reach an agreement on a potential outcome. The unclear specifications result in a lot of time and resources being allocated to resolve the issues, where the service provider eventually can take advantage of loopholes to avoid fees and other punishments. Meaning that Västtrafik itself wastes resources on these issues while also risking financial drawbacks.

4.5.3 Analysis of Requirements

Furthermore, according to Table 5, and in terms of *requirements*, 61 of these apply to the service provider and 4 apply to Västtrafik. Additionally, approximately 94% of them apply to the service provider, and 6% to Västtrafik. Again, this comes naturally considering that Västtrafik is the facilitator of this partnership.

Table 5, Requirements In Model Agreements

	Service Provider	**Case Company**
Chapter 2	2	-
Chapter 6	11	-
Chapter 7	27	-
Chapter 8	3	2
Chapter 10	1	-
Chapter 11	9	1
Chapter 12	2	-
Chapter 13	6	1
Total	**61**	**4**
Total %	**93,8%**	**6,2%**

The initial issue with the *requirements* is that the standard agreement includes a high number of requirements making several of these demands hard to follow-up, or even following-up at all. Meaning that the partnership is built upon a standard agreement that involves requirements that are not treated at all, and perhaps should be reconsidered and possibly not be in the agreement at all. The agreement itself presents the requirements in a continuous text which demands time and resources to interpret and manage.

4.5.4 Analysis of Bonuses and Penalty Fees

Lastly, in terms of the economic aspects, *bonuses*, and *penalty fees*, the results in the table 6 were obtained. However, a frequency table was made only for the penalty fees since the incentives and bonuses are relatively few in comparison. Moreover, all the penalty fees appear in the same chapter, hence, a different structure was conducted in Table 6, whereas the type of penalty fee is described instead of which chapter it appears in.

Table 6, Frequency Table of Penalty Types

Penalty fee (type)	Amount
Canceled Service	2
Partly Canceled Service	2
Late Service	4
Non-Registered Services	1
Faulty Prerequisite for Service	5
Safety	1
Not Allowed Service	1

Regarding the penalty fees, these are often presented in a continuous text in the standard agreement. It is challenging to understand which and when certain penalty fees are supposed to be activated considering how the standard agreement is outlined without tables and required follow-up information. The penalty fees are also linked with the bonuses and incentives, meaning that the bonuses might get excluded if the service provider fails to reach certain results. Instead, they receive penalty fees. The conditions for penalty fees or bonuses are commonly presented with a few words in a larger continuous text in the middle or at the end of a chapter. For the relevant people going through the text to find the right rules, it can be incredibly challenging and resource-demanding to navigate and understand what is to be done and what rules are to be followed. An example of the issue is presented in Figure 9.

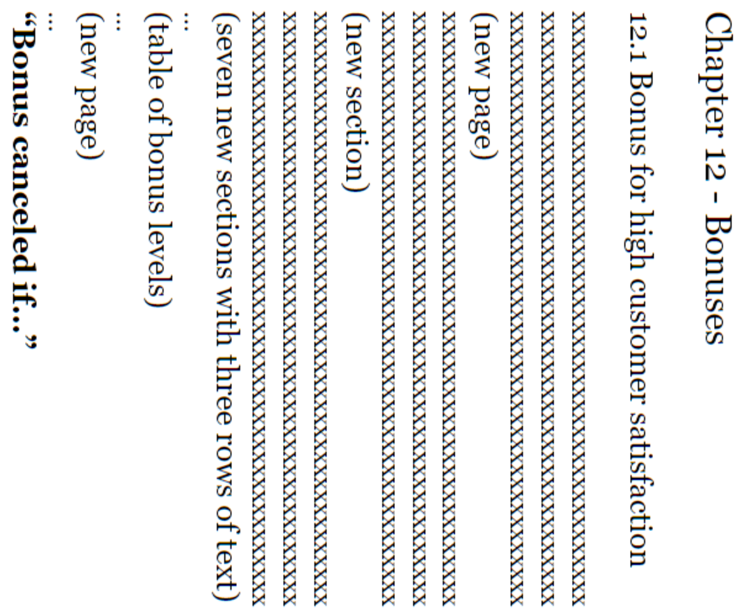

Figure 9, Example of Low Degree of Standardization and High Degree of Ambiguity

This part of the standard agreement explains that if a certain amount of penalty fee services is reached, the bonuses will not be delivered to the service providers. The information is placed in the middle of the chapter regarding bonuses and additionally is not included as information in the chapter regarding penalty fees. Therefore, the information could easily be missed by one of the two parties. A low degree of standardization is prevalent in terms of having the "bonus canceled if…" placed at different parts of the text for different subsections, resulting in a high degree of ambiguity when the reader needs to obtain the information quickly. In combination with lacking standardization in terms of how crucial information is structurally put in the text under a subsection as described above, there is also a lack of standardization regarding where the incentives, bonuses, and penalty fees are explained and exemplified to the reader. For example, the bonus part in terms of incentive validation degree provides the formula for calculation as well as a calculation example in the standard agreement. However, the bonus for customer satisfaction is only provided in terms of different target levels and their corresponding sums, not how to calculate them. There is an attachment that describes how customer satisfaction should be calculated, but there is no standardization in terms of describing the calculation process for one bonus in the standard agreement and another bonus in an attachment.

4.5.5 Summarization of Problem and Corresponding Consequences

The different problems identified and their corresponding consequences for each aspect of the standard agreement as mentioned in the document analysis are summarized in Table 7.

Table 7, Problems and Consequences of corresponding model agreement aspect

	Responsible for	**Requirements**	**Bonuses & Penalty Fees**
Problem(s)	Lack of specification Gray zone	High frequency of requirements Lacking standardization	Lacking standardization
Consequence(s)	Resource allocation to resolve issues Loopholes for the service provider to avoid fees	Resource demanding Difficulties in following up the requirements	Resource demanding Risk of missing crucial information Economic margin of error

As an effect of the problems identified for each aspect in the table above and their corresponding consequences, the standard agreement becomes very extensive in terms of resources needed to ensure that the agreement is followed, and to what extent. For example, in the process of following up on the bonuses and penalty fees, the responsible people working for the service provider must manually transfer all the information in terms of the number of services into Excel files. There are several different service providers, which all have their own individual models of Excel's which they use to report the information regarding the number of services provided and the corresponding fees to Västtrafik. This results in Västtrafik's controller's need to navigate between different documents without any type of standardization. As an effect of this, pre-required knowledge in terms of standard agreement specifications is necessary for the employees managing the follow-up process. Furthermore, to successfully accomplish the follow-up process the controllers need to invest a lot of time and resources while managing several different Excel files. This opens the possibility of achieving a non-correct result in terms of a potential economical margin of error. Hence, the common theme for all the analyzed aspects in the standard agreement is that they are presented in a way that is uncertain and lacks standardization.

In conclusion, the collected data from the interviews relate to the results of the document analysis. The different consequences in table 7 above correspond to the drivers for digitalization which were identified from the interviews. In the interviews as well as the document analysis, a resource-demanding process, difficulties in following up, and a loss of control were identified. Additionally, one problem identified from the document analysis of the standard agreements is a lacking standardization, which corresponds to the prerequisite of needing to standardize to free up resources to prepare for and conduct a digitalization.

5 Analysis

In the analysis chapter, the collected data is put in relation to the theoretical framework to answer the study's research questions. Firstly, the results of the first research question are put in relation to the theoretical framework regarding drivers for digitalization. Secondly, the results of the second research question are put in relation to the theoretical framework regarding prerequisites for digitalization.

5.1 Drivers for Digitalization

To answer the first research question, "*What are the drivers for digitalization for public companies?"* a literature review, interviews, observations, and a document analysis were conducted. Whereas the results from the interviews and observations were confirmed in the document analysis. In terms of the data collection from Västtrafik, several drivers for digitalization were identified. Moreover, to make it clear, a driver for digitalization in the sense of Västtrafik is a reason *why* they need to digitalize.

The first identified driver for digitalization for Västtrafik is the fact that their current process in terms of standard agreements is experienced as *resource-demanding* according to the interviewees. The second driver is basically how the process is resource-demanding in practice. Manual work constitutes most of the process, and the interviewees described the process as hard to *conduct, navigate*, and further *follow up*. This results in *unclear responsibilities* and a *loss of control*, which is the third driver. For example, the employees do not know who or what organizational function is responsible for what, as well as achieving different process results every time. Hence, there is a strong relationship between the three identified drivers. The effect of not having a sufficient process for the standard agreement results in difficulties to conduct, navigate, and follow up the process. Whereas two consequences of this are resource-demanding processes and unclear responsibilities and loss of control. Thereby, Västtrafik questions why they have not developed this process further.

Looking back at the introduction and the problem description, Sansone et al. (2017) describe that all companies need to manage the development of technology to stay relevant and competitive. Two essential aspects of competitiveness are *sustainable development* and *efficiency* (Xiaotian & Zilin, 2023). As presented in the theoretical framework, sustainability can be defined in several different ways and can be considered as a driver for digitalization. Sustainable development is described by Sarkis and Rasheed (1995), as an opportunity for achieving a competitive advantage by cutting costs. Whereas the central focus is to include technology in business processes in a structured manner over time to obtain sustainable development. Moreover, another concept is the TBL. This is described by Savitz (2013) as a wide concept within sustainability that includes the company's performance on the broader economy, the environment, and the society. These perspectives are refined by Fisk (2010), who concludes that people, planet, and profit are easier to apply in business situations, and need to be considered to achieve sustainability.

Looking at the identified drivers for digitalization, these correspond to the theoretical framework in terms of sustainability in several ways. It is evident from the data collection and the document analysis that the process involves manual work, which makes the process resource-demanding in terms of time and money. Looking at the process through the concept of TBL as described by Fisk (2010), the people and profit perspectives can be used to understand why the current standard agreement process is not sustainable. Driver 1 revolves around having resource-demanding processes, which influences both people and profit. Employees must invest a great amount of time to conduct the process, which for Västtrafik results in a loss of time and money that potentially could be allocated elsewhere. As an effect of the drivers having a strong relationship, the perspectives of people and profit is applicable in the same way to them as well. For example, driver 2 and driver 3 revolve around the waste of time and money through having an insufficient process (driver 2) which results in unclear responsibilities and a loss of control (driver 3), hence affecting the perspectives of people and planet once again. Furthermore, companies need to consider sustainability as a new source of innovation and an opportunity for cutting costs and achieving competitive advantages which go under the concept of strategic sustainability (Sarkis & Rasheed, 1995; Watson et al., 2010). The main and central focus of sustainable development is the involvement of digitalization. Watson et al. (2010) mention that digitalization can be used to improve the overall sustainability of business and society. In terms of Västtrafik, it is evident from the data collection and the document analysis that the current process for standard agreements requires lots of manual work and resources. Hence, suggests a need for process improvement through digitalization, which will also contribute to Västtrafik’s sustainable development.

Moving on from sustainability, efficiency can also be considered a driver for digitalization. According to Adrodegari et al. (2017), companies that implement digitalization capabilities and invest in technology in their business commonly achieve an increased value of their offering as well as an enhancement of their processes and long-term profitability. According to Staniulienė and Lavickaitė, (2022) and Zoltners et al., (2021), digitalization can be used to obtain increased efficiency. They further explain that digitalization can improve personnel productivity which results in positive effects on the company’s performance. Driver 1 and 2 identified from Västtrafik data collection can be put in the perspective of a potential efficiency loss, whereas these steps take an unnecessarily long time to conduct, again referring to the different wastes within Lean (King, 2019). This can be interpreted as a waste and efficiency problem, whereas King (2019) describes that something which is resource-demanding does not create any value for the business. Additionally, looking at driver 2, the standard agreements are experienced as hard to conduct, navigate, and follow up. These drivers for digitalization can be found in theory as well, where Parviainen et al. (2017) describe that an investment in digitalization can replace manual processes with automatic ones to store and collect data to better obtain information regarding processes. Hence, an identified driver for digitalization prevalent in literature and in practice is efficiency.

5.2 Prerequisites for Digitalization

To answer the second research question, "*What are the prerequisites for digitalization for public companies?*", a literature review, interviews, observations, and a document analysis were conducted. Whereas the results from the interviews and observations were confirmed in the document analysis. To be clear, lacking prerequisites were identified in the data collection, that are equivalent to needed prerequisites for digitalization in this section. Prerequisites for digitalization were identified in the literature as well as from the data collection.

It is evident from the data collection that Västtrafik does not assess itself to be mature enough to conduct a digitalization. There are no free resources to perform a change initiative as an effect of the employees consequently sitting in meetings, hence barely having any space to breathe. There has been an explicit need to digitalize certain processes for a while, but as a consequence of not possessing the *ability to allocate resources*, the change process has been put aside. Moreover, another prerequisite that Västtrafik themselves assess as lacking is the prevalent *capability to change* within the organization. For example, if the word "digitalization" is mentioned, employees act through a fear of change, based upon the opinion that the work process is sufficient as of today. The first two identified prerequisites from the data collection at Västtrafik can be put in relation to theory. According to Henriette et al. (2015), investing in digitalization commonly results in a major change in ways of working which will affect the resources and processes of the business. Morgan (2019) argues similarly, whereas the author describes that companies must organize and prepare themselves thereafter to create prerequisites for a successful implementation. To successfully digitalize, organizations must invest in leadership support, standards, and policies, as well as training and skills development. Moreover, Kotter (2007) argues that most organizational transformations fail, and further provides an eight-step framework to help with organizational change efforts. Step 1 and step 2 emphasize the need to "establish a sense of urgency" and to form a "powerful guiding coalition" to create prerequisites for a change. These two steps can be put in relation to the lacking prerequisites which Västtrafik currently possesses, whereas they need to understand that a digital transformation is a "must" to stay relevant, and they need to prioritize it in terms of an allocation of resources through a powerful guiding coalition.

The last prerequisite for digitalization identified for Västtrafik is the lack of *standardized processes.* According to the respondents, the results of the standard agreements differ a lot as an effect of the process being conducted differently for different service providers. The need to standardize is also prevalent in the document analysis. For example, some of the "responsible for" are mentioned at the start of a section, some at the beginning, and some at the end, making it hard for the reader to obtain information quickly. Moreover, some information regarding "bonuses and penalty fees" in the standard agreements is presented in text, while some are in attachments, resulting in different results of the process. The need to standardize can also be found as a prerequisite in literature. According to Wanichko (2021), standardization is a way to obtain agility and flexibility in a process. Furthermore, the author explains that both aspects are key to preparing and potentially conducting a digitalization.

According to Petersson et al. (2015), standardization is a part of Lean methodology. The author defines standardization as the most appropriate and beneficial way to execute a specific working task. The author continues by explaining that by standardizing a process, the risk of achieving different types of results is eliminated, which allows for a higher quality efficiency. With an agreed standard, an organization can define what should be seen as a normal state, hence making it easier to identify discrepancies and wastes in the process, whilst creating processes that require fewer resources. Moreover, the author describes different wastes which need to be identified and further eliminated to obtain efficiency. In contrast, from the results, it can be determined that the standard agreement process includes the waste of wait and problems in the process. For instance, Västtrafik spends a lot of time waiting for information from the service provider. This waste is visualized in section 4.1.2 and visualized in a simplified value stream map, which according to Womack and Jones (1994) can help map up processes and identify where waste is present. Once the waste is identified and classified, it needs to be eliminated. A way to eliminate waste is through standardization and through the use of 5S, whereas the initial idea is to improve the efficiency of a system (Singh et al., 2014). Through the use of the different concepts of sort, set in order, shine, standardize, and sustain, efficiency can be obtained (Kumar et al., 2022). Hence, through identification, classification, and lastly elimination of waste through standardization and 5S, the company can make the process less resource-demanding and more efficient.

5.3 Answer to Research Questions

From the analysis above, it is now possible to answer the research questions of the study. Again, it is important to mention that drivers refer to why the organization needs to digitalize, and prerequisites as to what they need to consider preparing for digitalization.

The identified drivers for digitalization for public companies were obtained from the data collection. From the literature review, the drivers of *sustainable development* and *efficiency* are identified. These are identified as drivers because of the fact that digitalization helps improve both of these, hence contributing to a company’s competitiveness and relevance in a positive manner. Moreover, from the interviews, observations, and document analysis, the three drivers of *resource demanding processes, difficulties in conducting, navigating, and following up the process,* as well as the process resulting in *unclear responsibilities and a loss of control* were identified.

The identified prerequisites for digitalization for public companies were obtained from the data collection. From the literature review, we found prerequisites in terms of *organizational preparation* of change management and leadership support, and *standardization* were identified. Moreover, from the interviews, observations, and document analysis, the three prerequisites of *ability to allocate resources*, *capability to change,* and *standardized processes* were identified.

6 Conclusion & Discussion

In the following chapter, the conclusions of the study are presented in relation to the purpose, research questions, and problem area. Moreover, this chapter presents a discussion of the result in terms of the two research questions, whereas the relevance of the answers is discussed. Lastly, a discussion of the chosen methodology for the study is conducted in terms of the author's experience.

6.1 Conclusion

The purpose of the study was to understand why public companies need to digitalize, and what should be considered to prepare for a digitalization. In other words, and as presented in the research questions, to investigate what the drivers and prerequisites are for digitalization for public companies. Again, it is important to emphasize that drivers refer to why the organization needs to digitalize, and prerequisites as to what prerequisites should be considered to prepare for a digitalization.

The identified drivers of why a public company needs to digitalize have its roots in the fact that public companies are currently lacking behind in keeping up with the latest technology. From the results and analysis, the identified drivers for digitalization were **resource-demanding processes, difficulties in conducting, navigating, and following up the process**, as well as the process concluded in **unclear responsibilities and a loss of control.** Whereas digitalization helps enhance this process, both in terms of efficiency but also in terms of sustainability and sustainable development.

Moreover, it is also evident that public companies find it especially hard to drive change initiatives, hence aggravating the process of potential digitalization. From the results and analysis, prerequisites to be considered for public companies to digitalize were identified in terms of possessing the **ability to allocate resources, capabilities to change, and standardized processes.**

Therefore, in conclusion, it is evident that there is a knowledge gap for public companies in terms of digitalization. Hence, it is important for public companies to understand the current situation of their business and understand that there are benefits and opportunities to reap from digitalization in terms of higher efficiency and better sustainability in terms of sustainable development. It is also critical for public companies to understand what prerequisites should be considered to prepare for digitalization, whereas standardization is of extra importance for Västtrafik in this study. In summary, the understanding of digitalization and its effect on efficiency and sustainability in combination with practical consideration of the methods within Lean and change management is essential for public companies to prepare and increase their chances of success for digitalization.

6.2 Discussion
6.2.1 Results Discussion
From the results, drivers, and prerequisites for digitalization for Västtrafik were identified through interviews and observations and confirmed in the document analysis. In terms of the answers to the research questions, they are most likely not representative of the general problem area of the digitalization knowledge gap for public companies.

6.2.1.1 Research Question 1
For research question 1 “What are the drivers for digitalization for public companies?”, several drivers were identified. However, these drivers are most likely not the same for all public companies. For the process that was studied at Västtrafik, the customer is not a private person, but rather a service-providing business. Hence, resulting in Västtrafik somewhat losing the intention of satisfying their customers, therefore having more of an internal perspective of what the drivers for digitalization might be. Moreover, the second driver for digitalization for Västtrafik was resource-demanding processes. As described in the analysis, this driver can be categorized as a need for increased sustainability in terms of reduced emissions, which is one of the most important organizational goals for Västtrafik. According to theory, reduced emissions are put under planet as described by Fisk (2010). However, this might not be the case for all public companies. For example, a public company in terms of hospital would more likely focus on the perspective of people as described by the author. Lastly, it is important to distinguish that these are identified drivers for a public company and not a private one. The difference between drivers in this sense would probably be a more intensive focus on profit for private companies than for public ones. Meaning that a driver for digitalization would be profitability in that case.

6.2.1.2 Research Question 2
For research question 2 “What are the prerequisites for digitalization for a public company? “, several prerequisites were identified. These prerequisites are determined to be quite similar for public companies. Checsinki et al. (2019) describe that change efforts within the public sector have a higher fail ratio as compared to the private sector. Hence suggesting that they possess worse prerequisites to succeed with organizational change initiatives overall than compared to private companies. For example, some public companies are non-profit, meaning that the ambition to perform work activities in the most profitable way is not quite the same as for private companies. Additionally, with the same reasoning, the intent to continuously develop existing processes and work procedures is not as prevalent for public companies as for private ones. Moreover, there might be differences between the required prerequisites between public companies as well, depending on the business industry in which the company operates. For example, how far different public companies within different industries have reached and developed in the sense of digitalization might have a strong effect on the required prerequisites. If a company already has some degree of digitalization, the prerequisites to prepare for and conduct it for another process would be different than the ones identified for Västtrafik in this study.

6.2.2 Method Discussion

6.2.2.1 Research Strategy and Research Design

In general, the research strategy chosen for this study was experienced by the researchers as suitable. The choice of using qualitative data as a basis for the data collection helped the researchers to understand the problem. However, quantitative data could have been used for the data collection to obtain the data faster, which was an existent problem during the data collection where meetings had to be booked, etc. For example, using a survey. Moreover, an abductive approach was fitting, since some of the data collected required a pre-understanding of several areas which were new to the researchers.

6.2.2.2 Validity and Reliability

According to Blomkvist and Hallin (2014), the validity of a study is determined to be high if:

- The presented literature is relevant to the purpose, research questions, and problem area of the study.
- All theory in the theoretical framework is used in the analysis chapter and corresponds to the purpose and research questions.
- The problem area, purpose, and research questions correspond to the choice of data collection and sampling.

In terms of these requirements for high validity, the validity of the study is determined to be high but not flawless. The presented literature is determined to be relevant for the purpose, research questions, and problem area of the study. The literature is presented in the theoretical framework, which describes sustainability, digitalization, and organizational prerequisites as well as different theories which correlate to why digitalization is needed for public companies, and what should be considered to prepare for it. It is evident from the problem description that there is an existent knowledge gap for public companies regarding digitalization, which is being addressed in this study through a case study in relation to existing literature. Moreover, all the theories in the theoretical framework are not used in the analysis. For example, the VSM is used in the results to describe the current process for standard agreements. Another example is the use of an operations improvement strategy, which only is used in the last chapter of the study. The data collection and sampling correspond to the problem area, purpose, and research questions of the study. Semi-structured interviews in combination with observations, as well as a document analysis constituted the data collection which were all based upon the research questions to some degree. The research questions revolve around why digitalization is needed in terms of drivers, and what a company needs to consider when digitalizing in terms of prerequisites. Hence, a case study was suitable (Säftsen & Gustavsson, 2019). The sampling and choice of respondents to interview were decided together with Västtrafik, where only relevant roles and employees that had a good understanding of the problematic situation at Västtrafik were interviewed.

In terms of reliability, Yin (2007) describes that high reliability is obtained if another investigator can follow the exact same approach and reach the same results. The investigation of the study is based on one study at one company, meaning that the generalizability of the study could be questioned. If the study and the investigation had been completed at several different public companies, the researchers could increase the generalizability. However, to complement and to some extent increase the generalizability the researcher's added theory and literature to the results of the investigation to contribute to more general conclusions regarding the investigation and to bring a deeper sense of multilateralism to the study. Additionally, to increase the reliability of the study, both researchers were present at the interviews whereas one asked the questions, and one documented the answers. According to Patel and Davidson (2011), with two researchers it is easier for one of the researchers to focus on the interview itself while the other can focus on documenting, registering, and taking notes of the data, hence increasing the reliability. Whereas another effect of being two people present at the interviews, was the fact that the one taking notes could observe the min game and reactions of the respondent.

6.2.2.3 Data Collection

Moreover, the interviews that were executed during the investigation were semi-structured and consisted of a low degree of standardization. The reason for this was mainly that the researchers intended to keep an open pathway during the entire process. During the interviews, both researchers were always present, one of the researchers held the interviews with the respondent and the other was responsible for taking notes of the answers from the respondent. Using this type of approach, the researchers had a more secure way of collecting data because the answers were received by two different individuals instead of one which means that the interpretations and preferences can differ between the two. Executing the interviews and observations in this manner instead of having one researcher responsible, can contribute to a more comprehensive and nuanced picture of the interviews and observations. Regarding the data collection, the road was not a straight line and an easy path to follow, but rather bumpy and sprawling. For instance, initially, there seemed to be a huge economical margin of error in the follow-up process of the standard agreements as an effect of not being digitalized. The researchers dug deeper in this area, to later find out that this was not the case. Hence, bringing the researchers back a few steps in the process in the sense of determining the drivers for digitalization. Lastly, the study was limited to investigating one of Västtrafik's many standard agreements, and for one service type only as an effect on the set time limit of the project as an entirety. Hence, the data collection was based on one process for one service type only.

During the investigation and the data collection, the researchers pursued method triangulation. Triangulation contributes to a stronger validation of the collected data of the study. The researchers executed both interviews, observations, and a document analysis to ensure the result of the collected data. Method triangulation gives more perspective from different angles and should therefore contribute to a more accurate picture of reality.

6.3 Implications

According to previous research, most public company change initiatives fail, and public companies are currently lacking behind in terms of conducting digitalization. Hence, there is a need for public companies to understand why they need to digitalize, and what they need to consider preparing for it. The findings of this study reveal drivers and prerequisites for digitalization for one public company. The drivers and prerequisites are determined to be quite generalized, and hence applicable to similar public companies. However, it is important to emphasize that companies can have similar characteristics as an effect of working in the same industry, but never two exact copies of each other. There are likely differences in organizational structure, employees, and ways of working. As an effect of this, a company that considers conducting a digitalization needs to identify its own drivers and prerequisites for digitalization. Finally, the findings in this study can be used as an inspiration for similar companies to consider when evaluating preparing and conducting for a digitalization. Whilst the drivers and prerequisites identified in this study might be relevant for some companies, the value of this study lies in the importance of identifying why a company should digitalize (drivers), and what they need to consider to do it (prerequisites).

6.4 Further Research

To validate the findings in this study, it would be relevant to conduct a multiple case study. Through the comparison of similar processes at other public companies, perhaps different drivers or prerequisites for digitalization can be identified. Additionally, conducting a similar study but with a quantitative data collection method to widen the sample of the data could be of relevance. Both within one case company, but also between multiple companies. Hence, possibly providing insight if the drivers and prerequisites prevalent in this study can be generalized to a best practice, which all public companies need to consider to prepare for and conduct a digitalization. Moreover, the scope of this study was limited to investigating one service type within Västtrafik. If the existing knowledge gap for public organizations in terms of drivers and prerequisites for digitalization is to be closed, findings in other service areas and their corresponding processes need to be addressed as well.

6.5 Recommendations for Västtrafik

As a last part of this study, and to fulfill the aim of the study, recommendations to Västtrafik are presented. These recommendations are based on the theoretical framework, collected data, analysis, and conclusions of the study. The recommendations revolve around why Västtrafik needs to digitalize and what they need to consider to do it.

Initially, Västtrafik needs to create an understanding throughout the organization in terms of why they need to digitalize. According to the results, as of today, the process for standard agreement is experienced as resource-demanding, hard to conduct, navigate, and follow up, as well as ending up in unclear responsibilities and a loss of control. Theory thoroughly explains that there needs to be a consensus that this process is insufficient as of today to create a sense of urgency and a will to change for the better. Through a document analysis that looked at only one of many standard agreements used at Västtrafik, several problems and consequences were found. Hence, suggesting the same results if Västtrafik analyzes their other standard agreements and processes for other service types as well. It is evident from the theoretical findings that there is a relationship between digitalization, efficiency, and sustainable development. This knowledge needs to be understood by Västtrafik, whereas one of their main goals is to achieve better sustainability for their organization. Which again, can be used as an argument as to why Västtrafik needs to digitalize.

Furthermore, Västtrafik needs to understand that a potential digitalization requires different organizational prerequisites. According to the results of the study, Västtrafik currently possesses restrained resources, resistance to change, and a need to standardize. The first two become highly problematic in terms of conducting an organizational change, whereas the last one hinders a potential digitalization. It is evident that Västtrafik employees as of today barely have space to breathe which distinctly hinders any form of organizational change. Hence, prerequisites in terms of allocating resources for a change need to be created. Either by changing employees' current responsibilities, hiring outside consultants, or simply hiring new employees to conduct the work. According to theory, to tackle the problem of resistance to change, leadership support, standards, and policies, as well as training and skills development needs to be facilitated.

Moreover, to prepare for a digitalization, standardization is required. According to theory, standardization provides agility and flexibility to processes that easily can be misinterpreted. This reasoning is built upon the fact that standardization results in less resource-demanding processes, which provides resources to conduct other types of work. This seems to be a good first step for Västtrafik, where they can solve the problem of having restrained resources, as well as a process that results differently all of the time, both at once.

Lastly, to standardize, we suggest the use of Lean methodology. Through the identification and classification of waste in the standard agreement process (possibly through VSM), Västtrafik can use the tools of 5S and standardized work to eliminate this waste, hence creating resources in terms of time which acts as a prerequisite for a potential digitalization.

To summarize, we suggest that Västtrafik needs to:

1. Conduct similar analyses on the current situation at the company or use this report as a basis to understand their drivers and prerequisites for digitalization.
    a. Gain knowledge of the relationship between digitalization, efficiency, and sustainable development by reading this or similar studies.

2. Communicate the current situation of the standard agreement process.
    a. What does it look like today, and why is this problematic?
3. Create prerequisites for digitalization by identifying waste in the standard agreement process using Lean and eliminate it through standardization to free up resources.
    a. Manage resistance to change.
    b. Realize that a change initiative involves people, conduct appropriate leadership accordingly
4. Assess potential effects of standardization.
    a. Is a digitalization more feasible now?

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