



Master's degree thesis

LOG950 Logistics

**A Case Study of Sykehusinnkjøp HF: Analysis of
Success Factors and Barriers to Efficient Procurement**

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Preface and acknowledgment

The completion of this master thesis marks the end of the Master of Science in Logistics program at Molde University College. My motivation for choosing public procurement within the specialized health care sector as research topic is my interest in identifying improvements in the health sector.

A special thanks to my supervisor Deodat Edward Mwesiumo and co-supervisor Geir Arne Svenning for support and guidance. This thesis would not be the same without your valuable feedback and help.

I would also like to thank Sykehusinnkjøp HF for making this thesis possible by providing all the relevant data and giving valuable insight into their procurements. Furthermore, a huge thanks to all the representatives at Sykehusinnkjøp for giving of your time and answering my questions during a hectic period of the COVID-19 pandemic.

June 2020

Kristina Haavik

Abstract

In recent years public procurement has gained increased attention. Every year the Norwegian public makes procurements for approximately 500 billion Norwegian Kroner. Due to the large amount of money that is spent on public procurement every year, this thesis objective is to analyze several procurements to identify the barriers and success factors to efficient procurement, as well as make some recommendations for improvements. This is done through a qualitative case study of Sykehusinnkjøp with multiple embedded units of analysis.

The chosen method of data collection is in-depth interviews, where several procurement advisors are interviewed to get a broad understanding of the barriers faced in the procurement as well as the success factors. Through a four week period all the data was collected, including all the documents from the tender.

The findings from the interviews reveal several barriers and success factors to efficient procurement. In total, five barriers and nine success factors are identified, whereas the barriers include over-specification, human error, few competitors, lack of standardization, and switching cost. The success factors involve standard documents, economies of knowledge, competition, total cost of ownership, partial offers, coordination, progress plan, market dialogue and product testing. The main findings reveal that the amount of suppliers in the market has a great impact on the procurement cost, where an increase in the number of suppliers resulted in a lower cost.

Based on the findings some improvements for Sykehusinnkjøp are suggested. Conducting a market dialogue should be more commonly adopted in Sykehusinnkjøp's procurements as it can help map the market as well as possibly reduce the number of human errors. Innovation through end-user involvement is also recommended as an improvement. By involving the end-user and the supplier, the product solutions can be improved and help new competitors enter the market. Furthermore, five recommendations for future research are suggested and managerial implications are presented.

List of abbreviations

Difi	Norwegian Digitalization Agency
Doffin	Norwegian database for public procurement
EU	European Union
Mercell	Norwegian tender implementation tool
NOK	Norwegian krone
OECD	The organization for Economic Co-operation and Development
PPM	Purchasing process models
PSM	Purchasing supply management
PU	Purchasing unit
SIK	Sykehusinnkjøp HF
TCO	Total cost of ownership
TED	European Union`s database for tendering (Tenders Electronic Daily)

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1.0 Introduction

This section will consist of an introduction to the research. It will provide insight into the background for this thesis, state the research questions and describe the identified research gap.

1.1 Research background

The complex Norwegian social welfare system comes at a cost. The public procurement use approximately 500 billion Norwegian kroner on public procurement yearly (Digitaliseringsdirektoratet n.d.), whereas 144 billions of these were in 2018 used on public expenditure within the specialized hospital sector (SSB n.d.). This amount will arguably increase as the Norwegian citizens' life expectancy is slowly rising. Including the population growth in Norway, a steady increase in demand for hospital services may occur (Tønnessen 2018). It is, therefore, essential to use the publics' resources efficiently.

Through recent years businesses have become more competitive, resulting in an increased focus on the purchasing and management department as key business drivers (Weele 2018, p. 2). This also applies to public procurement, which is important to boost jobs, growth and investment, facilitate to more innovative solutions and create an economy which is more resource and energy efficient (European Commission A n.d.).

To assure appropriate use of the public resources, directives from the European Union have established several regulations that Norwegian public procurement obliges to secure competition, justice, and hinder corruption and unfair selection (European Commission A n.d.).

In 2015 the public Norwegian hospital sector, consisting of four regions; Helse Nord, Helse Midt-Norge, Helse Vest and Helse Sør-Øst, established Sykehusinnkjøp HF (Regjeringen 2019). Sykehusinnkjøp was established to consolidate the procurement of goods for the hospitals and develop a category-based structure. Hence, the strategic and operative responsibility for procuring goods is outsourced from the regions to Sykehusinnkjøp HF (Sykehusinnkjøp 2015).

1.2 Research purpose

In 2015, Sykehusinnkjøp HF, from now on referred to as “SIK”, merged to one national unit with different divisions around the country. Previously the procurement units were linked to the different hospitals. Thus, the new implementation of a category-based structure was going to contribute to specialization and economies of scale (Sykehusinnkjøp A 2020). These factors are previously identified as success factors to efficient procurements (Weele 2010). However, through dialogue with SIK’s employees and analysis of their procurements in different regions I will try to identify success factors and barriers to efficient procurement, and by doing so also try to find improvements.

Furthermore, as SIK, or more accurately the hospitals procuring through SIK, is supported by the government through the Norwegian citizens' tax money, it is of interest that these resources are used appropriately. More efficient procurements, and therefore, potential findings in the study, could decrease the hospitals' procurement expenditures.

The empirical findings from the study should add academic value. From researching several databases it has not been identified any similar case study’s within this area. Furthermore, there is not much research on efficient procurement in the early procurement processes. The main focus of the literature is on the whole process, e.g. Weele (2018), and the articles on health procurement are more related to innovation.

Furthermore, the research question also have to be interesting in terms of the logistical aspect. As procurement is an important part of logistics, it is essential to keep the costs of the acquired products low. Hence, keeping the Supply Chain costs at a minimum (Chopra 2016). In logistics acquiring the right products with the right specifications is essential to satisfy the customer. For SIK it is more complex. The hospital is their customer, which has regular tax-paying citizens as users. The citizens demand services but do not directly pay for each visit to the hospital. Therefore, with government support, it is arguably difficult to keep the procurement cost low as it is stable demand. Hence, researching the barriers to efficient procurement are interesting to research to identify cost-saving improvements and highlight the success factors facilitating for efficient procurement.

1.3 Research Questions

The main objective of this thesis is to analyze previous procurements at SIK to identify success factors and barriers to efficient procurements. By investigating this topic, contribution to the field of research will be provided through qualitative research on SIK's procurements. This will be done by answering the following research questions:

- *What are the success factors and barriers to efficient procurements in Sykehusinnkjøp HF's initial procurement processes?*
- *How can Sykehusinnkjøp's procurements be improved and the identified barriers be avoided?*

In this context efficient is meant by a procurement that has the most favourable conditions. Meaning, that the procured goods have the right quality, are in the right quantity, at the right time and from the right source at the right cost (Emmett 2008, p.3).

To narrow down the scope of research I will focus on the tactical purchasing process referred to as the initial processes in the research question. Tactical purchasing is defined by Weele (2018) as "*all the activities aimed at defining purchasing materials and/or service requirements, supplier selection, contract definition, and negotiation*" (Weele 2018, p. 30). Because of this, the thesis will not focus on the ordering and evaluation phase. Through meetings between the hospital and SIK, the specifications for the purchase is established. SIK further develops the contracts which are given to the specific hospital. Hence, the research will focus on everything from planning the progress for the procurement to developing the requirements, publishing the tender, and handing over the contract to the hospitals. This narrowfication is made due to the time limit. Analysing the evaluation would be relevant for this study due to the impact previous procurements and its evaluation have on future acquisitions, which is a success factor to efficient procurements.

Furthermore, to narrow the field of research even further, only procurements within the category of lab products and equipment will be analyzed. In total, six procurements from this department in division Vest and Midt-Norge will be studied. By interviewing three

employees in division Vest and Midt-Norge on various procurements, I can acquire a good foundation for analysing barriers and success factors for efficient procurement.

To summarize, this thesis seeks to explore the barriers and success factors to efficient procurement. This is of scientific interest because the procurement processes in the public hospital sector in Norway is not broadly researched. By systematically searching at academic databases for “Health public procurement”, “efficient public procurement”, “efficient procurement”, “lab procurements”, “user involvement in procurement”, “customer involvement in procurements” and for example “procurement specification” there are not many relevant articles. It is also of interest to SIK because by identifying the barriers and success factors to efficient procurement it can cause awareness and possibly result in improvements.

1.4 Thesis outline

The following outline represents an overview of the different parts of the thesis:

Chapter 1: Introduction to the research, background, purpose and a presentation of the research questions.

Chapter 2: A literature review of all the relevant literature, including an introduction to procurement, public procurement, the procurement process, innovation, end-user involvement, and public regulations.

Chapter 3: A presentation of the research methodology, the chosen design and the epistemological orientation. Justification of the different choices will be presented, including the selection criteria.

Chapter 4: Presentation of the case, Sykehusinnkjøp HF.

Chapter 5: Presentation of the collected data from the interviews.

Chapter 6: Discussion of the research questions.

Chapter 7: Conclusion, implications, future study and limitations.

2.0 Literature review

2.1 Chapter introduction

In this section, I will identify relevant theories within efficient procurement with focus on the health sector. My intent is that the literature will contribute to the foundation of answering the research question(s).

The literature is obtained through books, articles, scientific papers and reports. The date from the online references is the last edited point in time and not the published date. Yin (2003) states:

“the use of theory, in doing case studies, is not only an immense aid in defining the appropriate research design and data collection but also becomes the main vehicle for generalizing the results of the case study (Yin 2003, p. 33).

First, the background of the field will be presented to establish a basis around public procurement, and then the theoretical framework will be introduced. The theoretical framework will evolve more around the theory that will be used in the discussion, and thus in the research. It will focus on specific elements within public procurement.

2.2 Background of the field

2.2.1 Purchasing

In later years the purchasing activities in organizations have received increased attention due to its key position in supply chains (Karjalainen 2011). Purchasing is not only considered as an operative function anymore but also a strategic one, and important in achieving organizational competitiveness (Paulraj, Chen, and Flynn 2006). The aim for effectiveness and international efficiency has resulted in increased centralization and coordination of the purchasing function (Faes, Matthyssens, and Vandembemt 2000).

Weele (2018) gives an insight into the common definition of purchasing:

“Purchasing is the management of the company’s external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company’s primary support activities is secured under the most favourable conditions” (Weele 2018, p.2).

Store Norske leksikon (n.d.) further supports this definition and defines purchasing as a word for acquiring goods, services and construction work. Chopra (2016) has a similar definition of procurement which highlights the focus on procurement in the whole supply chain, *“procurement is the process of obtaining goods and services within a supply chain”* (Chopra 2016, p.69), whereas a supply chain consist of all the parties involved in fulfilling a request from a customer. Meaning, that procurement is a part of a greater supply chain.

According to Ellram et al. (2020) and Emmett (2008) Purchasing Supply Management (PSM) has its origins embedded in the five rights. These five rights involves the following: *“securing supplies, materials, and services of the right quality in the right quantity at the right time from the right place (source) at the right cost”* (Emmett 2008, p.3). Further, Emmett (2008) implies that these are inter-related, meaning that they are not mutually exclusive. If one of them is not obtained, for example the wrong price, the five rights have not been accomplished. Emmett also defines the objective of procurement as procuring goods or services at the lowest acquisition cost. Ellram (2020) defines PSM as a broader term where strategic decisions around sustainability, outsourcing and globalisation are

involved. Thus, there are many definitions for purchasing, both broader and more concise terms.

The words procurement and purchasing are both commonly used. However, Weele (2010) defines procurement as basing decisions on Total Cost of Ownership (TCO), meaning that the purchaser takes all the costs during the goods lifetime into consideration. Hence, Weele (2010) states that the word procurement is more commonly used when looking at TCO in a project environment. In this research, both of the terms are used.

2.2.2 The purchasing process models

There are several different Purchasing Process Models (PPM). A PPM is defined by Bäckstrand et al. (2019) as “*the visual representation of the sequence of activities that constitute purchasing and supply chain management*” (Bäckstrand et al. 2019, p. 1). Bäckstrand et al. have explored the existing PPMs where they identify the most commonly adopted models. This is done through a structured literature review on the current PPMs and through interviewing academics and educators on which models they use. Decision-making, linear, cyclical and hybrid linear-cyclical process models are introduced, whereas they conclude that the most common model is Weele’s linear process model. The findings also reveal that out of the 73 PPM’s, 41 of these are linear process models which shows that these processes are more common (Bäckstrand et al. 2019). As such this study applies Weele’s model and the Norwegian department for public procurement’s own PPM, which is also a linear process model (Difi A 2020).

Figure 1 presents Weele’s (2018) six-step model for the procurement process, which consists of “*determining specification, selecting supplier, contracting, ordering, expediting and evaluation, and follow-up and evaluation*” (Weele 2018, p. 8). The purchasing function is also divided into two categories: tactical purchasing and order function. As mentioned, this research will focus on the tactical purchasing which involves the first three steps: determining the specifications, selecting supplier and contracting.

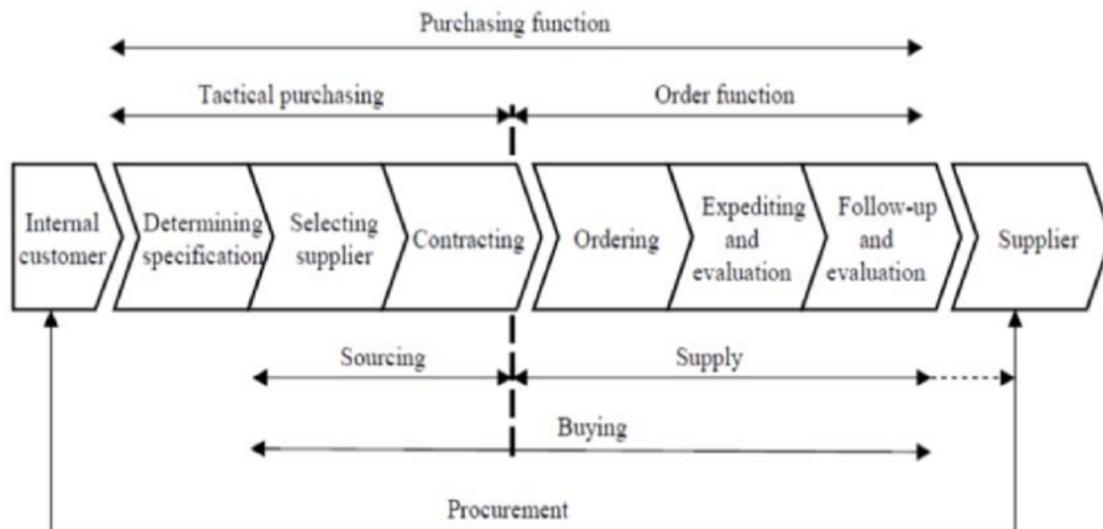


Figure 1: The six-step model. Adopted from Weele (2018)

Throughout the procurement process the following activities are covered:

1. Deciding whether to make or buy the goods, as to if the internal sources needed are available, or look for external sources through outsourcing.
2. Determining the specifications by defining the goods, services or solutions necessary and wanted functions. This involves defining the required quality, services, and more.
3. Selecting the most advantageous supplier compared to the specifications and develop adequate procedures and routines to make this possible.
4. Deciding on an adequate contract. Carry out the negotiations with the supplier to establish an agreement and further sign the legal contract.
5. Ordering from the selected supplier.
6. Expediting the delivery of supply and going through the suppliers invoices against the delivery as well as the agreed terms and conditions.
7. Evaluation and follow-up of the supplier.

Baldi et al. (2016) support that the procurement process is made up of different steps, which include pre-procurement stage, tender process and contract award, contract and supplier management. They argue that the different stages “requires a specific and careful design to guarantee the best possible procurement outcomes” (Baldi et al. 2016, p. 2) .

The Norwegian department for public procurement’s website, called Anskaffelser, established by “Digitaliseringsdirektoratet”, also called Difi, has fewer steps in their PPM

(Difi A 2020). The public procurement process involves three main steps from the execution of a procurement to the realisation of earnings. The content of this model is quite similar to Weele's (2018). The first and foremost step is clarification of demand and preparation for the tender, the second is the competitive tender, while the last and third is following up the contracts. Furthermore, each step involves more detailed processes. When clarifying the demand and establishing a plan forward, evaluating the need and looking at the procurement's risks are essential. Verifying the need and mapping the supplier market, establishing a competition base for suppliers, making specifications and adequate requirements to qualify for the bid, are also important. Throughout the process of tendering there are certain laws that need to be followed. This is to secure a fair procurement process which does not favour any of the tenders. For the last step it needs to follow up the supplier and manage the contract (Difi A 2020)

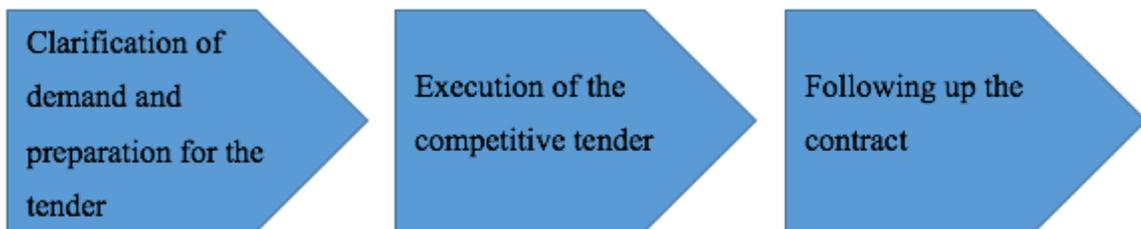


Figure 2: Difi's Procurement process (reproduced from (Difi A 2020))

2.2.3 Public procurement

The public procurement discipline has been recognised as a major market force due to the amount of money that is spent on public procurement every year (Obwegeser and Müller 2018). OECD's report "*Government at a Glance 2015*" (2015) reveals that in total an average of 29 percent of the general government expenditure were used on public procurement in 2013. They further state:

"As public procurement account for a substantial portion of taxpayers' money, governments are expected to carry it out efficiently and with high standards of conduct in order to ensure high quality of service delivery and safeguard the public interest" (Government at a Glance 2015 2015, p. 136).

Public procurement is defined by OECD (n.d.) as purchase of goods, services and works made by the government and state-owned enterprises. This involves all the activities from assessing the need and over to awards to contract management and lastly the final payment (OECD n.d.). This definition is supported by Torvatn and de Boer (2017) which states that it is "*any acquisition made by a public organization and agency where public money is spent to acquire goods and/or services from non-public suppliers*" (Torvatn and de Boer 2017, p. 4). On the other hand, Baldi et al. (2016) views public procurement as a process whereas it is "*the process by which public authorities, such as central government or local authorities, procure the resources needed to pursuit their institutional goals*" (Baldi et al. 2016, p. 1).

Furthermore, public procurement are different from private procurement because of the public's complexity. The public procurement involves disciplines such as economics, specific rules and regulations, as well as public finance and administration (Weele 2018). Weele (2018) further, highlights the important characteristic of public procurement policy which is the public's accountability and its legality of tendering. This means that private companies could sue the public procurement department if it is not compliant with the public laws. Another element highlighted by Torvatn and de Boer (2017) that distinguishes public and private procurement are the possibility for relationship-based solutions in private procurement. The authors see a trend that public procurement usually adopt competitive tendering while private purchasing use more relationship-based contracting.

Another key factor which is different from private procurement is the funding of the acquisitions. Through tax income, which is provided by the taxpayers, the public can afford the procurements. The public activities are therefore “*not subjected to the rules of free markets*” (Weele 2018, p. 123).

The public actors also have a social responsibility to manage the assets. Therefore, the typical objectives of the procurement policies are not just economic but it also seeks to promote sustainable, ethic and quality when procuring goods and services (Weele 2018).

2.2.4 Public procurement system

Thai (2001) has established a public procurement system which consists of five core elements. These include policy making and management, procurement regulations, procurement authorization and appropriateness, public procurement function in operations and feedback. This system is highlighted because it shows the different elements impacting public procurement and how they are all linked together.

“The “procurement regulations” element (box 2), established by policy makers and management executives (box 1) becomes the institutional framework within public procurement professionals (be it contract officers, buyer, or procurement officers), and program managers (box 4) implement their authorized and funded procurement programs or projects (box 3), and also are accountable to policy makers and management executives (box 1)” (Thai 2001, p. 17).

In the following figure, the dotted line illustrates the feedback and adjustment which is directed to every box, while the black arrowed line illustrates the direct relationships (Thai 2001).

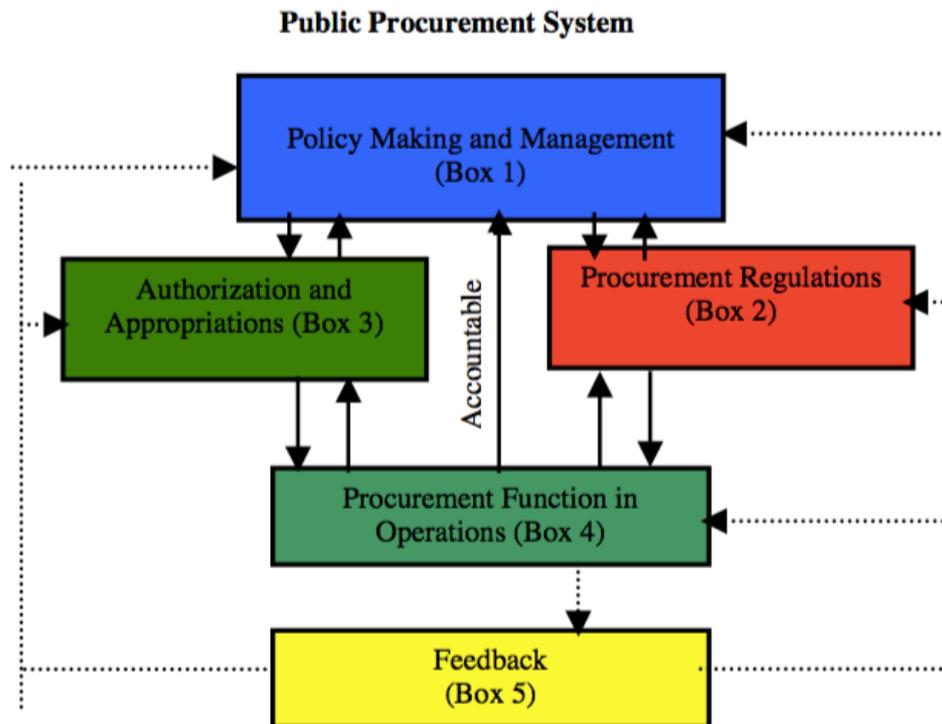


Figure 3: Public procurement system. Source: (Thai 2001)

The next section will evolve around the component public procurement regulations.

2.2.5 Public procurement regulations

The policy for purchasing within the public authorities have a very specific regime (Weele 2018). These are made up of international laws, national laws and jurisprudence. The public procurement laws are therefore defined as a “*formal way to go about contracts, i.e. how to deal with suppliers and how to award public contracts*” (Weele 2018, p. 109). If the laws are not followed it can cause delays in the procurement processes and could possibly result in supplier claims in court (Weele 2010).

“Anskaffelsesloven” (Lovdata n.d.), the public procurement act, discloses the regulations regarding public procurement. The aim of this law is to foster effective use of society’s resources, and contribute so that the public appear with integrity to maintain the citizens trust in the public’s ability to use the resources appropriately. Thus, this law will secure that the procurements are carried out in an expedient matter to preserve deference to competition, labour criminality, environment, climate, and social relations (Regjeringen n.d.). These regulations will not be further discussed, however every authority that conducts public procurement must obey these regulations.

2.2.6 Procurement procedures

Procurement procedures are defined by Weele (2010) as

“the total set of rules and regulations that are aimed at selecting the best supplier for the best product against the best conditions, recognizing European laws and regulations” (Weele 2010, p. 114).

Roodhooft and Van Den Abbeele (2006) supports this definition and states that:

“a tendering procedure starts with a call for tenders by a public authority. The call for tenders is accompanied by tendering specifications which contains requirements about the products to be supplied or the service to be rendered” (Roodhooft and Van Den Abbeele 2006, p. 496).

Furthermore, public tendering is defined as the processes which includes research of the market, development of a sourcing strategy based on the products specification for delivery and services, preparation of tender documents, evaluation of the suppliers, contracting, completion of the contract, and following-up the tender procedure (Weele 2010). The preparation of the tender documents includes both the technical requirements and the supplier selection and award criteria. This will be further explained under the theoretical framework.

The following procedures are included in public procurement by the European Directives. However, only the first two, open procedures and restricted procedure, are used in the chosen procurements.

- *Open procedure*, includes equal opportunity for every supplier within the EU to subscribe to the governmental tender. This is the most used procedure.
- *Restricted procedure*, consists of two stages. The first stage is where interested suppliers are selected, while the other is where an invitation to the tender is sent to the preselected suppliers.
- *Competitive negotiated procedure*, involve negotiations with the relevant market parties. Here, discussions around content, execution and costs related to the contract are conducted. This procedure can only be used when negotiations are necessary because of the complexity of the purchase. Anyone can ask to participate. However, only those who are pre-selected will be able to submit initial tenders and to negotiate.

- *Competitive dialogue*, involve complex procurements where the contracting authority is unable to make adequate specifications on their own.
- *Design contest*, includes using the ideas of the market parties to establish a design.
- *Innovation partnership*, involves finding the right supplier where the contracting authorities need cannot be satisfied by already existing products in the market. Throughout the process a number of companies may participate (European Commission 2020; Weele 2010).

2.3 Theoretical framework

2.3.1 Supplier selection criteria and methods

When selecting and evaluating a supplier, award criteria are usually applied. These are used to select the adequate supplier, which is done through detailed evaluation of the suppliers proposals (Weele 2010). Tookey and Thiruchelvam (2011) states that “*the selection of the right decision making criteria paralleled with the right decision making technique is crucial for identifying the right supplier*” (Tookey and Thiruchelvam 2011, p. 437). They emphasize the importance of a precise and well-structured decision-making technique to achieve the corporate and business strategy of the purchasing organisation. In order to do this, and select the right supplier, comprehensive and configurable metrics for the selection must be defined early in the process. For example, defining the wanted capabilities and performance from the supplier (Tookey and Thiruchelvam 2011).

Furthermore, Tookey and Thiruchelvam (2011) study on the eveloving trends of supplier selection criteria and methods, revealed that the evaluation criteria quality, delivery and price were the most important attributes. Previously, before the 2000s, price scored higher. Tookey and Thiruchelvam further, conclude that price, delivery, quality and service are the traditional set of supplier selection criteria which is universal for most industries. Kumar Kar and K. Pani (2014) supports this, and also found that the critical supplier selection criteria in Indian manufacturing industries are quality, delivery compliance and price. In total, they identify seven criteria of critical importance, where the criterion e-transaction capability is gaining importance, due the increased usage of e-procurement platforms. Ho, Xu, and Dey (2010) literature review on the multi-criteria decision making approaches for supplier evaluation and selection also support the aforementioned findings. Their findings reveal that in contemporary supply chain management, the traditional single criterion approach based on lowest cost bidding is no longer supportive and robust enough. Findings reveal that quality is the most adopted criterion, which includes attributes such as: “*ISO quality system installed*”, “*low defect rate*”, “*process control ability*”, “*corrective and preventive action system*”, and more. Furthermore, delivery is the second most popular criterion (Ho, Xu, and Dey 2010).

Ho, Xu, and Dey (2010) literature review also looks into the supplier evaluation models adopted. The findings reveal eight used models as well as hybrids, whereas the data envelopment method was the most commonly used among the papers studied. On the other hand, Tookey and Thiruchelvam (2011) findings reveals another popular method of supplier evaluation. They found that the most popular method was categorical and weighted point methods as they have simple and quick evaluation processes.

The evaluation model should be used to systematize the evaluation of the individual offers, and to make a collective evaluation of the offer against the stated award criteria and the weighting of these. These models can be complex whereas they usually include a mathematical formula for scoring points. The main models highlighted by Difi (2019) are lowest price or lowest TCO, evaluation on only quality where the price is not an award criteria, relative point models and a method for pricing the quality (Difi 2019).

2.3.2 Specifications

During the procurement process initial stage, the purchasing requirements, also called specifications, are determined (Weele 2010). The widest concept, taking all the elements such as quality, logistics, maintenance, legal and environmental specifications into account are called the purchase (order) specification. The danger in this phase is over-specification, resulting in too many requirements imposed on the suppliers whereas only a few or a single supplier can deliver the requested product at an unnecessary high price without improving the products functionality. Furthermore, the format of the price should also be stated as well as the target budget, indicating which price category the solution provided by the prospective supplier should be in (Weele 2010).

According to Weele (2010) it is essential that the buying firm looks at the Total Cost of Ownership (TCO). If the buying firm only looks at the price, the supplier can put a low price on the products and a higher price on maintenance and spare parts.

These specifications must follow the EU directives principles for proportionality, non-discrimination, transparency and equality. Meaning, that the specifications needs to be made in such a way that it does not impede the functioning of supplier markets or prohibits

a single provider's opportunity to tender (Torvatn and de Boer 2017). Torvatn and de Boer (2017) further highlight that during the pre-tender of an open tendering procedure, interaction with potential providers are allowed and recommended, whereas during the tender phase it is prohibited (Torvatn and de Boer 2017).

An article on service specification by Holma et al. (2020) proposes a new model for stakeholder involvement as a triadic setting in the context of public service specification. The model of the triadic setting involves the customer, service providers and the Purchasing Unit (PU), whereas the PU is the intermediary. Holma et al. highlight several aspects that should be taken into consideration when identifying the need to involve the stakeholders in the public service specification. These include the complexity of the purchase, intended level of innovation, buyer-perceived uncertainty, and the providers buyer specific experience. The purchasing unit as the intermediary have to design the processes, decide the degree of involvement, and define the stakeholder roles. To achieve the triadic cooperation the service provider and internal customer also has their tasks that needs to be fulfilled. The service provider have to translate functional definitions into operational specifications, establish efficient resource levels to reduce service costs and price, create operational synergies, and develop the service specification based on a buyer-specific experience. The internal customer on the other hand have to participate in the decision making and give feedback to the service provider and PU. The study investigates the pre-tender phases of a municipality's catering services, where the focus is on the co-development of a service specification. Their findings reveal that the early involvement was lacking. It is stated: "*the more fixed a plan is when first presented to stakeholders, the fewer opportunities there are for the stakeholders to make a significant contribution to the content*" (Holma et al. 2020, p. 12). When everything was predefined, the providers felt that there were no genuine desire to further develop the specifications.

Some of the problems within specifications recognized by Roodhooft and Van Den Abbeele (2006) are over-specifications, lacking of sufficient demand management, and many changes connected to specifications.

2.3.3 Coordination and end-user involvement in purchasing

According to Chopra (2016), coordination requires every stage of the supply chain to share information and consider the impact one stages action have on the whole supply chain. To achieve coordination, Chopra emphasizes the importance of regular communication with all the stages as well as a willingness to share information. The effects of increased coordination and a better relationship throughout the supply chain tends to include lower transaction costs between the different stages (Chopra 2016).

Väinämö and Torvinen`s (2016) paper aims at increasing the understanding around how the living lab approach and end-user involvement leads to innovation, which again enhances the results through effectiveness and improved solutions. The concept living-lab emerges open innovation and user innovation, which includes user-centred research and integrated collaboration (Väinämö and Torvinen 2016). Furthermore, the two ideas living labs are driven by are conducting experiments in real-world settings through involving users as equal contributors (Almirall, Lee, and Wareham 2012). By doing so the end-user requirements can be detected at an early stage avoiding unsuitable solutions which could lead to fixing costs and dissatisfaction. Väinämö and Torvinen`s (2016) findings suggests that within public procurement product testing should be more widely adopted where the end-user is involved. The company should also still keep in mind the optimal balance of the price-quality ratio.

Furthermore, Väinämö and Torvinen`s (2016) study also suggests that careful considerations of the following criteria should be included when forming criteria and processes for innovative public procurement where product testing is conducted:

- Carefully determine the price-quality ratio.
- Thoroughly plan for product testing.
- Identify the necessary resources and plan sufficient working hours.
- Document the different phases.
- Communicate the phases to the supplier.
- Communicate the results.

2.3.4 Innovation in procurements

Throughout the years innovation within public procurement has gained increased attention. Through end-user involvement ideas for innovation can be implemented which can enhance public procurement result, by providing improved effectiveness and solutions (Väinämö and Torvinen 2016). Other reasons why innovation has gained increased attention within public procurement is due to its ability to increase the quality of public services, help address considerable societal challenges and support access to market for businesses such as small and medium-sized enterprises (European Commission B n.d.). Furthermore, an innovation is defined by the Norwegian government (Regjeringen 2010) as a new idea or invention that reaches a market with users or customers. The innovation can reach the market in several ways, which include launching a new product or service, a new production process, market adaptation or through new organizational forms that create economic value (Regjeringen 2010).

A sub-genre within innovation is Public Procurement for Innovation (PPI) which is defined by Edquist and Zabala-Iturriagoitia (2012) as a rationale that satisfies human needs and/or solves societal problems. Furthermore, the author states that public procurement for innovation occurs “*when a public organization places an order for the fulfilment of certain functions within a reasonable period of time (through a new product)*” (Edquist and Zabala-Iturriagoitia 2012, p. 1766). They further state that PPI’s main objective is not primarily to enhance the development of new products but to satisfy human needs or solve societal problems through targeting functions. Contrasting to this is regular procurement, which occurs when public authority’s buy finished and standardized products such as pens and papers “off the shelf”, whereas innovation is not involved. Then, when the supplier is selected, only the price and quality are taken into consideration.

Väinämö and Torvinen (2016) highlights that involving end-users, which is a growing trend in public procurement, can add innovation to the traditional procurement. Johnsen et al. (2006) explores this question around supplier and customer interaction during the innovation process. Other previous studies have also shown that these are the important actors in the innovation process (Takeishi 2001). However, Johnsen et al. (2006) argues that supplier and customer relationship might be factors of less importance in the innovation process in “*fluid and emerging contexts, than in mature and specific contexts*”

(Johnsen et al. 2006, p. 676). The findings from the study generally supports this argument:

“The majority of respondents representing the first two stages of innovation did not regard suppliers as important actors in the innovation process, although they usually described customers as critical. Once innovations entered the mature and specific stage respondents saw suppliers as playing an important role in bringing innovations to market successfully” (Johnsen et al. 2006, p. 676).

Johnsen et al. further argue that the explanatory factors for the result could be due to the participants underestimating the role of such relationships. Other factors such as reluctance to share knowledge openly with suppliers or that the respondents were not in positions with responsibilities for managing supplier relationships could also explain the results (Johnsen et al. 2006).

The greatest barrier for implementing innovative procurements are highlighted by Väinämö and Torvinen (2016) as the *“procuring entities` ability to explore and apply procedures enabling the development of providing innovative solutions”* (Väinämö and Torvinen 2016, p. 100). Thus, the procuring entity need to facilitate for innovation, and by doing so achieve the benefits of innovative solutions which enhances public procurement results through effectiveness (Väinämö and Torvinen 2016).

2.3.5 Market competition

Caldwell et al. (2005) study examines how agencies within public procurement maintain competitive markets. Here, the goal is to address impediments and achieve improvements in the understanding of strategic priorities in managing for competitive markets. As there are little previous research on the subject, the paper aims at bringing together some themes that public procurement needs to address to achieve effectiveness in managing competitive markets. The findings after studying three case studies are that further research is needed. The paper specifically identifies a need for research on supplier incentives at a market level, key supplier relationship management, professional development and post-contract management of suppliers (Caldwell et al. 2005). However, another study on Slovak public procurement by Grega and Nemeč (2015) summarizes the current findings on

competitiveness and its impact on the results of public procurement. Previous studies have proved that in average, increasing the number of competitors in public procurement, will decrease the prices. There are only a few research studies on the relation between number of competitors and quality of the purchased goods and works. The relation is therefore questionable. Hence, Grega and Nemec researched this through a regression analysis. The findings showed that competitiveness has a great impact on the final price of the procurement. However, the findings also showed that using lowest price criterion and financing through EU funds can influence the final procurement price as well. The authors state:

“we think that it is hardly possible to achieve efficiency and/or quality gains, if only a few potential suppliers compete for a government contract and there are other important factors influencing final price” (Grega and Nemec 201, p. 543).

Gupta`s (2002) study of the highway construction industry in Florida revealed that an increase in the number of participants in the tender from two to eight resulted in savings, whereas a number above eight did not result in any additional savings. It was also revealed that it was more difficult to create a cartel¹ when it was more participants. The reasoning for this was because of the high number it was difficult and costly to establish an agreement. Another study by Onur, Özcan, and Taş (2012) researching public procurement auctions and competition in Turkey, also found that the number of candidates were impacted by the estimated value of the procurement. This was directly proportional, meaning that the higher value, the more suppliers participated.

To increase competitiveness in public tenders Borowiec (2017) has identified several measures. These include eliminating barriers in accessing tenders, resulting in an increase in the participating companies, initiatives to hinder the development of anti-competitive agreements and reducing the cost for contracting authorities and contractors to increase the efficiency. Examples of eliminating barriers in accessing tenders include not using criteria related to company size, in tenders facilitating access to information, and increasing activities that promote competition. Other activities such as initiatives to counteract the

¹ A cartel is according to Preben Munthe (2019) an agreement between independent companies that regulates the competition. The competition can be regulated by the cartel members by establishing a deal to maintain the same prices, provide the same discounts and other terms of sale, or by sharing the market between them.

development of anti-competitive agreements include increasing availability of data on the tenders result, rejecting bids from contractors who have entered into collusion, and more (Borowiec 2017).

2.3.6 Switching costs

Switching costs are defined by Burnham, Frels, and Mahajan (2003) as “*onetime costs that customers associate with the process of switching from one provider to another*” (Burnham, Frels, and Mahajan 2003, p. 110). They further describe three types of switching costs which includes financial, procedural and relational switching costs. The first mentioned, includes fees to break contract, lost reward points and more. The second, involves the extra time and effort, as well as the uncertainty in adopting to a new supplier. The last, relational switching costs evolves around the personal relationships. Burnham, Frels, and Mahajan (2003) findings from researching switching costs are that relational switching costs have the most impact.

Further, (Blut et al. 2015) conducted a meta-analysis to find how different switching costs and satisfaction jointly affect repurchase. Their findings reveal that:

“(1) relational switching costs have the strongest association with repurchase intentions and behaviour; and (2) procedural and relational switching costs mitigate the association between satisfaction and repurchase intentions/behaviour whereas financial switching costs enhance it” (Blut et al. 2015, p. 1).

3.0 Research methodology

This study aim at collecting data reasonably as well as present and analyse the data appropriately. Hence, the following section will describe the philosophical view of the study, the research approach and design, and the method for collecting data. By doing so, the study's transparency increases and creates a possibility to carry out the same study later.

3.1 The philosophical orientation

The philosophical orientation to the research refers to the system of beliefs and assumptions about the development of knowledge. These beliefs and assumptions are divided into three. The epistemological assumption which evolves around the assumptions about human knowledge, the ontological assumptions, which are the realities you encounter in the research, and the axiological assumptions involving the extent and ways your values influence the research process. To constitute to a credible research philosophy it is essential to have a well-thought-out and consistent set of assumptions, which will “underpin your methodological choice, research strategy and data collection techniques and analysis procedures” (Saunders 2016, p. 124). Following is a figure of the research onion illustrating how every choice impacts the data collection and analysis:

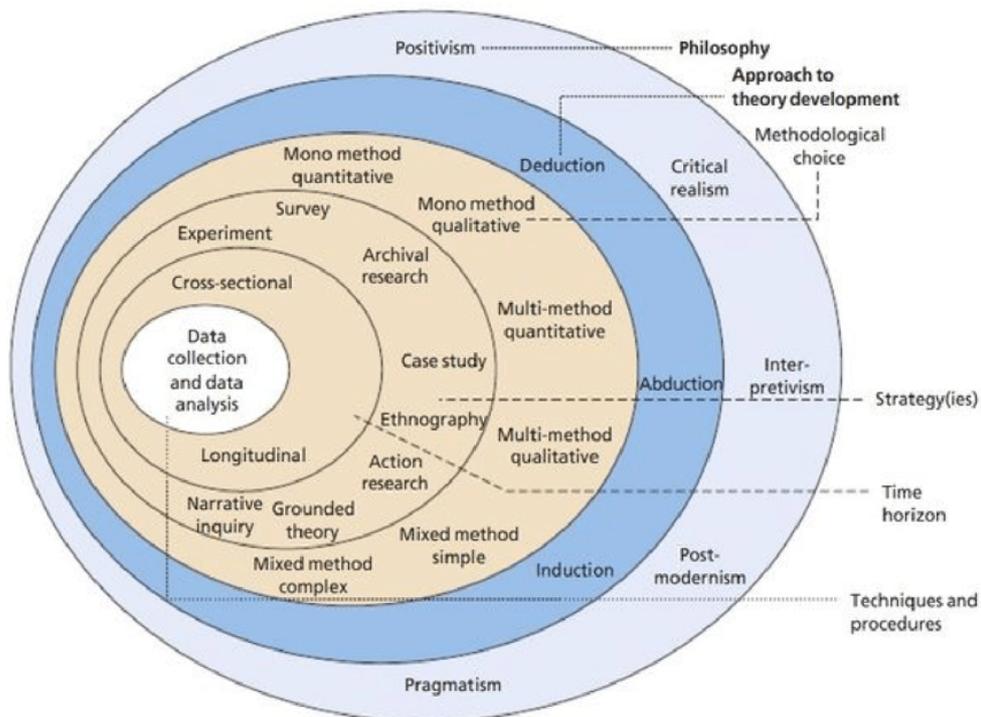


Figure 4: The research "onion". Source: (Saunders 2016)

The philosophical direction of the study is based on the view of interpretivism. According to Saunders (2016) “*interpretivism emphasizes that humans are different from physical phenomena because they create meanings*” (Saunders 2016, p. 140). Interpretivists argue that social sciences research needs to be different from natural sciences research as human beings and their worlds cannot be studied in the same way as physical phenomena. Further, interpretivists are critical to universal laws that “apply” to everyone, whereas they focus on different peoples cultural background, different circumstances and experiences of social realities. Saunders (2016) further states:

“An axiological implication of this is that interpretivists recognize that their interpretation of research materials and data, and thus their own values and beliefs, play an important role in the research process” (Saunders 2016, p. 141).

Some argues that this direction is highly appropriate in business and management research, because this point of view reflects “*a particular set of circumstances and interactions involving individuals coming together at a specific time*” (Saunders 2016, p. 141).

3.2 Research approach

It exists several approaches to the development of theory. These approaches to theory development are divided into deductive, where the researcher move from theory to data collection, inductive, which is an approach where the researcher move from data to theory, and abductive reasoning, which involves both, moving back and forth from data and theory (Saunders 2016).

This thesis follows the inductive approach, meaning that the theory follows the data. A study of a smaller sample is more normal in an inductive approach as it is more concerned with the context in which such events take place, where it tries to develop an understanding of the way in which humans interpret their social world. Having established the research approach makes it easier to decide the appropriate research design (Saunders 2016).

3.3 Research design

The research design is an essential part of the research process and shows how the data systematically will be collected to answer the research questions (Gripsrud 2016). It provides the framework for data collection and its analysis, and it shows the type of research that will be conducted. The overall strategy to receive the wanted information can be conceived through the choice of research design (Ghauri 2010). Yin (2003) supports this and defines research design as “*the logic that links the data to be collected to the initial questions of the study*” (Yin 2003, p. 19). Furthermore, Yin (2018) states the following:

“A research design is a logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions about these questions” (Yin 2018, p.26)

Gripsrud (2016) divides the research design into exploratory, descriptive, and causal. The essential characteristic of the explorative approach is its flexibility. When exploring the phenomenon, new pieces of information could be discovered, which could lead to a change in the direction of the study. The researcher must, therefore, be openminded, where the critical abilities involve observation, collecting data, and providing explanations concerning theory (Ghauri 2010). Furthermore, if the researcher does not know the research area, the primary goal could be to explore the phenomenon more closely. The data collection within an exploratory design will then help understand and interpret the phenomenon (Gripsrud 2016).

Where the problem is more structured and well understood, the research is more descriptive (Ghauri 2010). The researcher, according to Gripsrud (2016), has a fundamental understanding of the research area, where the goal is to describe the situation in a specific field. Here, conducting structured surveys by choosing a representative sample for the targeted market group is frequently used to increase the information on the area. Further, observations are also commonly used within the descriptive design (Gripsrud 2016).

This thesis aims at gaining more knowledge of Sykehusinnkjøp`s procurements and their processes. Analysing previous procurements and looking at barriers that occurred in the

process, as well as the factors contributing to efficient procurements, could arguably be a descriptive design as it describes the current situation. Another aspect is the fundamental understanding and already existing literature on public procurement. However, After conducting a literature review, no relevant studies have been found on SIK, which indicates that the study is leaning towards an explorative design. The literature research has only provided general information on other case studies within procurement, which is gathered for another purpose to gain insight into the studied case. Also, an exploratory design is more appropriate as the research is not very well understood, and because new critical information changes the approach to the research question (Gripsrud 2016).

Initially, the study aimed at comparing differences in the execution of procurements in division Vest and Midt-Norge by looking at similar acquisitions. As the findings after analysing the similar procurements in Vest and Midt-Norge resulted in many similarities, the conclusion was to change the research question to rather identify the barriers and success factors in achieving efficient procurement. The suitable methods chosen for this research is, therefore, the ones for exploratory design. These include focus groups, individual in-depth interviews, and secondary data through literature search (Gripsrud 2016).

3.3.1 Case study

According to Yin (2003), how and why research questions are more exploratory and, therefore, more likely to lead to case studies as a research method. A case study has advantages when

1. The main research question includes how or why
2. The researcher has no or little control over behavioural events
3. The focus of a study is contemporary (Yin 2018)

I, as a researcher, have no control over behavioural events because the procurements are in the past. Further, the focus of the study is contemporary since the advisors responsible for the procurements are still alive.

The study will analyse six procurements and look at the success factors and barriers to efficient procurement, the decisions that are made in the processes and why they were taken. Thus, this is following Yin's (2003) essence of case studies:

“The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result.” (Yin 2003, p. 12)

Furthermore, according to Yin (2018), this is a single case study design with multiple embedded units of analysis, also called an embedded case study design. The single case is Sykehusinnkjøp, where the embedded units of analysis are division Vest and Midt-Norge. This embedded case study can contribute by challenging or confirming the theories on public procurement. Also, contribute by providing information on the barriers and success factors to efficient procurements that Sykehusinnkjøp is experiencing. A potential vulnerability of this case study of Sykehusinnkjøp is that misrepresentation can occur. Thus, getting access to collecting enough case study evidence is key (Yin 2018). Several visits to Sykehusinnkjøp in both divisions were carried out to secure enough information on the case study.

3.4 Data collection

Data collection refers to the research methods, or in other words the techniques used to collect the data, where the appropriate methods are dependent on the research question (Ghauri 2010, p. 54). Here, it is important to rely on several sources of data to *“corroborate any insight by such informants and to search for contrary evidence as diligently as possible”* (Yin 2018, p. 119).

3.4.1 Primary data

Primary data is the data collected by the researcher, which includes interviews and observations. This is conducted to establish a foundation for the analysis. Here, in this phase, the risks involve that the object being observed will act differently than if the researcher had not been present. Accuracy of the data collected is, thus, the key element (Gripsrud 2016).

Sample

The sampling approach chosen in this research is purposive sampling. This means that the sample is chosen based on the goal of the research, so in a strategic way and not randomly (Bryman 2012), also called a non-probability sample by Ghauri (2010). As the initial research purpose was to compare similar procurements in division Vest and Midt-Norge, the chosen procurements were based on similarities such as product type. Meaning, that the chosen procurements in both the divisions had to be alike, for example that it was an acquisition of similar products. Another aim, to secure different views and opinions, was interviewing several procurement advisors, which was done through choosing procurements with various procurement advisors being responsible for the project. This resulted in two criteria: similarity in product groups and different responsible procurement advisors. Hence, six similar procurements were strategically chosen, three in division Vest and three in division Midt-Norge.

The exact number of procurements were chosen in regard to standardization, where the two divisions are chosen to represent the four regional divisions. Following is a list of the projects and their key characteristics:

Project characteristics	Project A	Project B	Project C	Project D	Project E	Project F
<i>Product</i>	Serology instruments		Laboratory blood testing equipment		Rotation Microtome	
<i>Division</i>	Vest	Midt-Norge	Vest	Midt-Norge	Vest	Midt-Norge
<i>Part of public procurement regulation</i>	1 and 3	1 and 3	1 and 3	1 and 3	1	1
<i>Estimated value</i>	Not available	3.200.000	35.000.000	65.000.000	Not available	Not available
<i>Type of competition</i>	Open procedure	Open procedure	Open procedure	Open procedure	Restricted procedure (Call for tender from four suppliers)	Open procedure
<i>Partial offers</i>	1	2	9	7	1	2
<i>Complexity</i>	Local	Regional	Regional	Regional	Local	Regional
<i>Award criteria and their weights (%)</i>	Quality (50), Environment (2), supplier services (8) & total cost (40)	Price (50), Quality (50)	Quality (50), Cost (40) and services (10)	Price (60), Quality (40)	Quality (50), Supplier services (10) and Price (40)	Price (60), Quality (40)
<i>Competition</i>	Yes	Yes	Yes	Yes	No	Yes
<i>Number of questions for the tender</i>	16	22	17	1	0	2

Interviews

Throughout the data collection phase, the qualitative method of conducting interviews to collect the relevant data were used. The main characteristic of qualitative methods is its ability to go in-depth to understand a phenomenon. Its goal is not to present data as numbers like quantitative methods do, but rather to describe and create understanding (Gripsrud 2016). Yin (2018) states that

“Interviews can especially help by suggesting explanations (i.e., the “how’s” and “whys”) of key events, as well as the insights reflecting participants’ relativist perspectives (Yin 2018, p. 118).

The interviews conducted are shorter in-depth case study interviews, which were chosen for the exact purpose of extracting as much information from the advisors on the chosen procurement.

As the research question focuses on the procurements, interviewing the advisors responsible for the procurements was essential to gain an understanding of the key events and the decisions made. Throughout the interviews, an interview guide was followed, which is attached in appendix A. When necessary, appropriate follow-up questions were added when elaboration on the topic was needed. These questions were often asked to make sure that I had understood what the advisor was saying, and, additionally, to increase my understanding of the procurement.

To secure that all the right questions were asked, the interview guide was sent to the leaders in division Vest and Midt-Norge. They both had an understanding of the research and gave feedback that the interview guide covered the most important topics. Furthermore, after conducting the first interview, feedback on the guide was asked for, where some adjustments were made. A few questions were added to cover the procurement processes. These included a question on whether the tender received any complaints from the suppliers in the evaluation process and the number of questions received in the tender. After transcribing the first interview, the interview was read through to assure that all the relevant topics to answer the research question were covered.

In total, six interviews were conducted where the aim was to gain an understanding of the success factors and barriers that occur in the chosen procurements, as well as possible improvements. Following is a table showing the interview schedule:

Date	Duration	Project	Division
30.01	27 Minutes	Project A	Vest
07.02	39 Minutes	Project C	Vest
07.02	47 Minutes	Project E	Vest
20.02	36 Minutes	Project D	Midt-Norge
21.02	26 Minutes	Project F	Midt-Norge
28.02	60 Minutes	Project B	Midt-Norge

Table 1: Interview schedule

Before conducting the interviews, the interview guide was sent to all the advisors, giving them the possibility to look into the procurement. Some of the procurements were from 2017, and, thus, to be able to respond to the interview questions, preparation was necessary. By looking into the procurements and the interview guide, the advisors were able to respond to the questions.

The interviews in division Vest were conducted during my visit from the 28th of January to the 7th of February. These interviews were conducted in the advisors' workplace. Two of three interviews in division Midt-Norge were conducted by phone, where facial expressions were absent. Phone interviews have previously been regarded as the “second best”-method whereas face-to-face interviews is preferred (Holt 2010). Holt (2010) and Johnson, Scheitle and Ecklund (2019) have challenged this view through research. Holt's (2010) findings reveal that the preferred method is dependent on the participant group and the planned method of data analysis. Furthermore, Johnson, Scheitle and Ecklund (2019) concludes that phone interviews reduces the richness of information produced in the interviews. However, they also argue that phone interviews are advantageous and necessary in some situations. As two of the interviewees from division Midt-Norge was not located in Molde, project D and F, it was regarded as appropriate to conduct phone interviews. The phone interview duration was not significantly shorter than the face-to-face interviews.

All the interviews were recorded and further transcribed. After the interviews were conducted, the scope of the study was refined to analyse the barriers and success factors to efficient procurement. This resulted in some essential follow-up questions being sent by mail to the procurement advisors.

3.4.2 Secondary data

Characteristics of secondary data are defined by Gripsrud (2016) as data that is collected by other researchers for different purposes. The use of the data is, therefore, a secondary application. These data include journal articles, books, newspapers, and data sources found online. Including journal articles and books, online data sources such as Sykehusinnkjøp's website, the Norwegian government (Regjeringen), Doffin, which is the Norwegian site for public procurement, have all been used to solve the research question(s) on what the success factors and barriers to efficient procurements are as well as possible improvements. Throughout the writing of the thesis I tried to be critical of the websites used which is emphasised by both Ghauri (2010) and Grisprud (2016).

Documents

Most of the archival records and documentations of the procurements are found online at Doffin, which is open for everyone. Included in the tender are general information on the procurement. However, not all of the documents are available online. For instance, some of the changes made during the tender period, such as changes made on specifications after cancellation and re-publication, are not registered. These documents were directly requested from the procurement advisor and sent by mail. All the requested documents were received.

3.5 Validity and reliability

This section will evolve around validity and reliability. These two terms are important because of its ability to make judgements on the quality of the research (Saunders 2016). Here, the construct validity and external validity as well as the reliability will be discussed. Discussing internal validity is seen as unnecessary as it looks at the causal relationship, which applies for explanatory or causal studies (Yin 2018).

3.5.1 Construct validity

Construct validity is according to Yin (2018) “*identifying correct operational measures for the concepts being studied*”(Yin 2018, p. 42). Multiple sources of evidence were used to secure construct validity. By having access to the documents from the tender and conducting the interviews some of the information said could be checked against the documents. Participant validation was possible through e-mail where follow-up questions or any clarifications were requested (Saunders 2016). By doing so they were allowed to comment and confirm the accuracy. However, only the parts where the information or statements were unclear was sent by e-mail, not the whole transcript from the interview.

3.5.2 External validity

External validity is “*showing whether and how a case study`s findings can be generalized*” (Yin 2018, p. 45). The conducted study has looked at laboratory procurements from both division Vest and Midt-Norge. The aim for analysing three procurements from two divisions is to make the results generalizable among all the four divisions within laboratory procurements. Ability to generalize among all the departments, and not just for laboratory procurements, are more difficult to obtain. However, the procurements follow the same procedures across the departments, and the same rules and regulations apply. Meaning, that some of the same barriers and success factors to efficient procurement can occur in the whole organization. The chosen procurements also have various complexity where some are local and regional, representing several types of procurements. Even though the procurement process will vary depending on the complexity, and thus, the chosen procurement procedure for the tender, it is possible to draw some lines between the different divisions and departments.

Since it is a non-probability sample, it is according to Ghauri (2010) not possible to make valid inferences about the population. Hence, it is difficult to argue that the results are generalizable outside of the organization. Since SIK's procurement processes are explained in the case description, the laws and regulations that need to be obliged are explained in the literature review and the findings are presented, the reader can make a decision on whether it is generalizable in regard to their organization.

3.5.3 Reliability

Reliability is “*demonstrating that the operations of a study – such as its data collection procedures – can be repeated, with the same result*” (Yin 2018, p. 42). In other words, it is a term for replication and consistency (Saunders 2016). Through several meetings with Sykehusinnkjøp HF, both in the division Midt-Norge and Vest, the scope of research was developed. Due to access to accommodation in Bergen and close access to Sykehusinnkjøp HF in Midt-Norge these two divisions were chosen. Thus, the divisions were chosen based on availability compared to gathering the most information. Through a two-week period in Bergen, interviews were conducted, and the relevant data material were gathered. At Sykehusinnkjøp in Bergen I had my own working space and could ask any questions. This made it easier to understand the procurement process and the rules and regulations that had to be followed. The procurements were chosen based on similar acquisitions in Vest and Midt-Norge, where the initial study was a comparative analysis of one procurement from each division. However, due to other interesting elements, the study was changed to analysing success factors and barriers to efficient procurements. In doing so, I could keep the initial sample and collected data. By having explained the circumstances around the study it makes it possible to conduct the same study over again.

Furthermore, to assure accuracy in the data collection, the interviews were recorded and further transcribed. To increase the reliability, and avoid participant bias, the interviews were conducted in a meeting room avoiding potential fear of speaking the truth due to someone listening (Saunders 2016).

4.0 Case: Sykehusinnkjøp HF

This section will consist of an introduction to SIK and its processes. The aim is to create an understanding of SIK to establish a good foundation before introducing the findings. If not otherwise listed, the information is provided through interviews and from internal documents at SIK.

4.1 Introduction

SIK was established in 2015 to secure a specialized and professional procurement service for the Norwegian specialist health service. Every December, the Norwegian hospitals send their forecast of the demand for the following year to SIK. Further, SIK follows the forecast and effectuates the procurements throughout the year. Through interactions with the hospitals, the most critical procurements are agreed upon and prioritized. Thus, the tactical purchasing is outsourced to SIK. The processes SIK conduct are among others: contact the suppliers, carry out the evaluations, and implementation of the contract so that the hospitals can purchase the goods and equipment when needed. Consequently, SIK leads the procurement processes in close cooperation with groups of specialists consisting of relevant professionals from the hospital. To conduct this and satisfy the Norwegian hospital's demand, the company has 270 employees at different locations in Norway (Sykehusinnkjøp A 2020). Furthermore, SIK executes all the procurements that are above the 100.000 Norwegian Kroner threshold, and follows the EU's rules and regulations for procurements (Regjeringen 2017).

The following figure illustrates the division of roles among the Norwegian hospital and SIK. The Norwegian hospitals provide the premises of the acquisitions while SIK executes the procurements (Sykehusinnkjøp 2018). Furthermore, the hospitals receive the completed contracts from SIK and carry out the ordering.

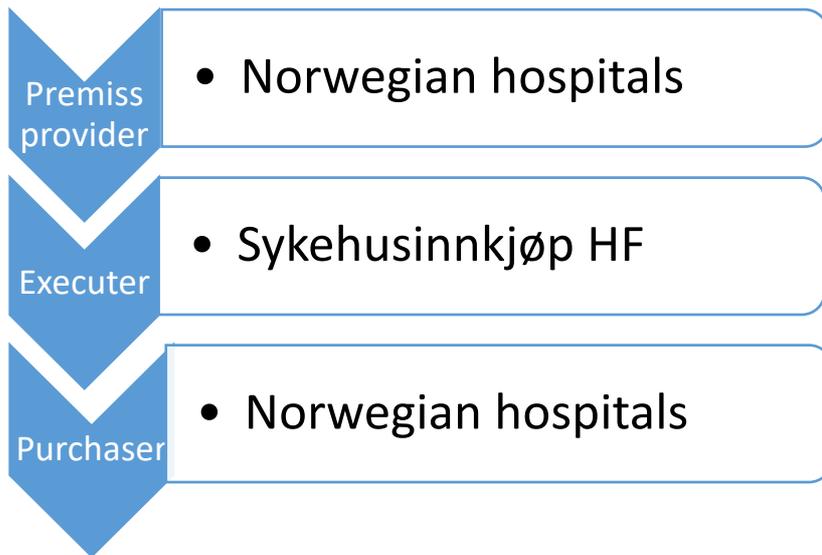


Figure 5: Illustration of role division (reproduced from (Sykehusinnkjøp 2018))

4.2 Sykehusinnkjøp's vision and strategy

Before establishing SIK, acquisitions of goods occurred in the hospital regions, which are Midt, Vest, Nord, and Sør-Øst. Then, every region procured what they demanded.

Meaning that the procurement advisors procured goods for their region, but also in some cases for a specific hospital. The aim of establishing SIK was to specialize the different advisors into certain product groups, increase coordination and maintain the close access to the customer:

“The company shall have central management and decentralized structure. The company must actively participate in international networks and seek participation in international alliances to promote increased coordination of procurement at an international level. The purchasing service should be professional, specialized, and accessible to the customers” (Sykehusinnkjøp A 2020)

SIK consists of several divisions, including national services, pharmaceutical products, and the primary regional divisions, including division Nord, Midt-Norge, Sør-Øst, and Vest.

The reasoning for maintaining the primary regions was SIK's vision to be close to the specialist health services (Sykehusinnkjøp A 2020). According to the procurement advisors, the hospitals needs are different and, thus, need special attention. By preserving a certain degree of closeness to the hospitals the cooperation becomes easier.

Furthermore, to elucidate the intentions of establishing SIK and their strategy for the divisions structure, the following is stated on their website:

“The purpose of a common national category structure is to support interaction between the health enterprises in the specialist health service by establishing a common communication platform, standardizing conceptual use, supporting the procurement processes and facilitating better management of procurement in the specialist health service” (Sykehusinnkjøp 2019).

According to the advisors, by establishing SIK, the aim was also to achieve standard processes, documents, and specialization to increase effectiveness and predictability for the suppliers, gaining economies of scale and improving the employee`s competence by implementing a category-based structure within the goods procured.

Each division consists of several groups and categories. The main groups are medical and non-medical procurements, which is further divided into categories. These categories within medical procurements include laboratory equipment, which is the research area, medical technical equipment, prehospital, surgical products, processing aids, and more. Non-medical procurements consists of administration, human resources, information communications technology, and more (Sykehusinnkjøp 2019). Depending on the need in the region, the divisions are divided into these groups and categories.

Among Sykehusinnkjøp`s missions as offering procurement services it also has a corporate social responsibility. The company shall focus on ethical sustainable procurement and also foster innovation (Sykehusinnkjøp A 2020). Recently, Sykehusinnkjøp has established, together with the professional hospital environment, an environmental policy that needs to be followed. This environmental policy gives clear requirements to the project managers in Sykehusinnkjøp to use these guidelines and specifications in all relevant procurements. The goal of this policy is to secure that Sykehusinnkjøp meets the owners demand of being an urger for environmental purchasing (Sykehusinnkjøp C 2020).

In 2019 SIK arranged a dialogue Conference with many of their suppliers. As SIK is working on its strategy, they wanted feedback and suggestions for improvements from the suppliers. The new strategy aims at making a solid base for increased cooperation with

customers and suppliers as well as enlighten the focus areas within procurement. As a part of the strategy, SIK will concretize a procurement strategy with guidance for category management. The feedback from the medical companies emphasize transparency in the tender processes, especially when it comes to the criteria's which are evaluation (Aslak Ballari 2019).

Moving forward, it will be many changes to Sykehusinnkjøp. They have, according to the advisors, started intensive work on becoming more coordinated where they are establishing standard documents and platforms to share learnings.

4.3 Coordination

Increasing the number of coordinated procurements regionally as well as across divisions is a part of SIK's strategy. Several of the interviewed procurement advisors state that regional procurements increase the economies of scale and are less time consuming than to run a tender for each of the hospitals. Hence, local procurements are more appropriate when the hospitals have less common needs or demand instruments that, for example, only need renewal every ten years. Infrequent acquisitions are, according to the advisors, difficult to coordinate. Thus, SIK tries to coordinate the tenders where the demand and need for a product is fairly similar.

The benefits of regional procurements are:

- Economies of scale on the products demanded.
- Cover a large area.
- Easier to follow-up one contract instead of several, resulting in less administration in the regional procurements.
- Fewer tenders that needs to be executed, potentially resulting in more efficient use of resources.

Challenges of regional procurements:

- Maintain control over all the products and product groups.
- Increased need for good cooperation with the professionals and the project group.

4.4 Procurement process

Throughout the writing of this thesis, SIK is establishing standard procurement processes, where the objective is that all the divisions will follow the same process flow diagram. I will add a short section providing information on the process flow diagram in Vest that is quite similar to the standard procurement processes that are under development. The chosen procurements went through all of these processes both in division Midt-Norge and Vest. Hence, it was decided that providing two diagrams with the procurement processes would not be necessary.

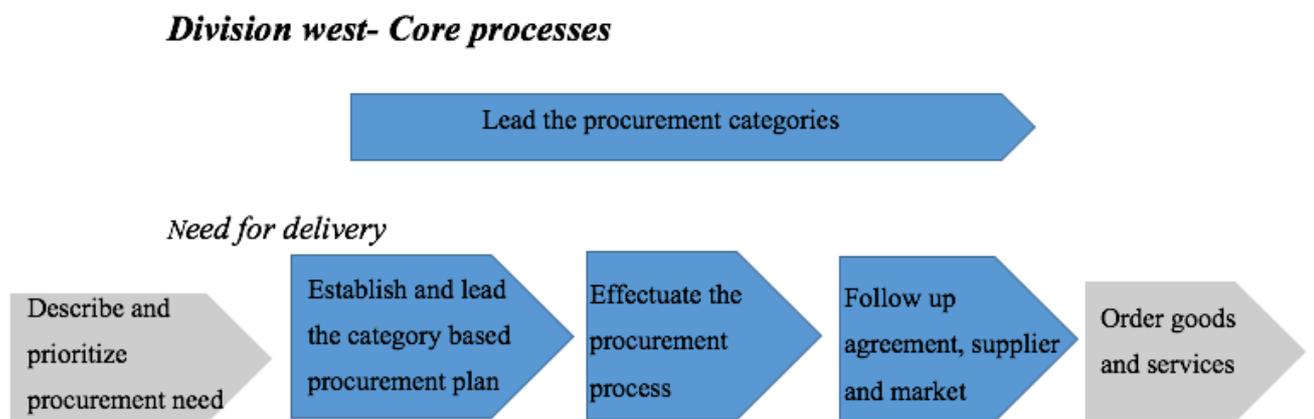


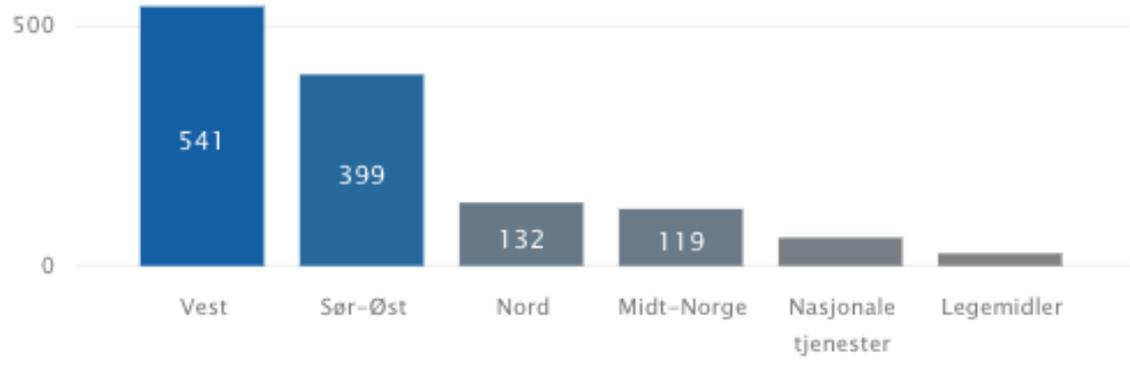
Figure 6: SIK's processes (reproduced)

Each box represents its processes. The colour grey illustrates the processes outside of SIK. Meaning, that the hospitals describe the need for procurements in the upcoming year, and further order these when the contract is provided by SIK.

Establish and lead the category based procurement plan

In the first step “*establish and lead the category based procurement plan*”, SIK receives the hospital's demand of goods for the upcoming year. From this, SIK establishes a procurement plan and prioritizes the most important procurements. The following diagram is a plan for SIK's overall projects, which is forecasted to be executed in 2020. Throughout the year, some changes are made, where identification of new demands and cancellation of forecasted demands occur. Thus, the procurement plan of the products that will be acquired is updated throughout the year, where it is performed periodic revision of the procurement plan (Sykehusinnkjøp B 2020):

Prosjektfordeling



Effectuation of the procurement process

The next step “*effectuation of the procurement process*” involves investigating the threshold values as to which regulations that apply and clarification of what the procurement will consist of. Depending on the complexity of the procurement, the frequency of the meetings will be set. What the different roles will do in the procurement is defined, as well as risk, criticality, and deadline. Relevant professional employees are chosen to establish a project group which are responsible for acquiring the right products. Further, the project group is called in to participate in a start-up meeting, where the specifications for demanded products are established. To summarize SIK`s step of effectuating the procurement process:

1. Establish mandate and progress plan.
2. Prepare a competitive basis and obtain offers.
3. Evaluate offers and award agreement.
4. Complete and sign agreement.

Hence, this step looks into all the processes from definition of need to implementation of the contract. These processes are further explained in the following section.

1. Establish mandate and progress plan

This phase consists of establishing a project group and developing a progress plan. In some cases a market dialogue is also conducted to increase the market knowledge.

Project group

The project group consists of a team of professionals from the involved hospitals as well as normally one advisor from SIK. The professionals from the hospitals main responsibilities involve following-up the hospital they represent through continuous flow of information. This includes gathering the relevant statistics of yearly consumption of the product and arranging product testing if it is determined as necessary. The professionals also have the opportunity to propose changes to the project plan, including updating the product scope. Together the group establishes the specifications, the basis for the competition, conducts the evaluation and decides whether product testing is necessary. When procuring the product, the procurement advisor establishes an end report.

Progress plan

The progress plan consists of dates that different processes will be finished by and is established in the beginning of the procurement stages. Here is an example:

Approved project and progress plan	Basis of competition announced	Offer ready for evaluation	Contract awarded	Procurement protocol signed	Final report approved and project completed
16.05.2018	31.05.2018	19.06.2018	28.06.2018	14.09.2018	28.09.2018

Market dialogue

In some cases, if the project group does not have enough information on the existing products in the market, they conduct a market dialogue. This is legal as long as the procurement advisor treats the suppliers equally, avoid giving unreasonable competitive advantage and do not disclose trade secrets. It is also necessary to make appropriate measures to ensure that those suppliers who have been contacted do not have an unfair competitive advantage (Difi B 2020).

Dialogue with the market is possible in several ways. It can be done by actively seeking advice in the market from the suppliers, sectors, advisors, independent experts, research centers or other market actors. It can also be done through receiving unsolicited advice from, for example, suppliers, industries, advisors, or through participation in trend fairs and other professional environments, through information of up-coming procurements and demands, inviting to meetings and conferences, and by requesting written information from suppliers. Finally, conducting market dialogue can also be done by posting all or parts of the tender documents, the requirements specification and contract terms for

“consultation” on Doffin and invite potential suppliers to submit their input. Good market knowledge provides better needs coverage in a cost-effective way (Difi B 2020).

2. Prepare a competitive basis and obtain offers

In this section, the project group establishes the specifications which create the basis for the competition. It is therefore important to be familiar with the market to establish specifications for standardized products that have competitors in the market. In some cases, the specifications are made before the market dialogue. This is done to secure that the right specifications have been made through receiving feedback from the market.

Qualification requirements

Qualification requirements are conditions that need to be fulfilled for a supplier to participate in the tender. These are related to the suppliers` ability to deliver the desired goods or services.

Award criteria

Tenders from providers that meet the qualification requirements will be evaluated on the basis of a set of main criterions. These are called award criteria. Examples of commonly used award criteria are total cost, product, contract understanding, service, delivery time, and so on. In the chosen procurements the used award criterions are price, quality, environment and service.

Specifications

Specifications describe the overall need and requirement elements that should be covered, which results to deliver, and how delivery will be followed up throughout the contracts lifetime. The specifications are the way the need is described: need for a certain capacity, availability, satisfaction of a certain quality and among other things a certain level of environmental characteristics. All of these elements will altogether satisfy the procurement need. Good specifications increase the possibility that the delivery covers the demand, opens up for cost efficient solutions, stimulates innovation, establishes the basis for efficient guarantees and provides the right division of risk among the supplier and awarding authority (Difi C 2020). These specifications can be divided into two categories which are minimum and evaluation specifications.

The minimum specifications are absolute requirements that must be satisfied for a product or service to be acceptable to the client. Unsatisfied minimum requirements will mainly result in the product or service offered being rejected from the competition. Minimum requirements are assessed only in relation to yes or no and are not graded in relation to the grade scale.

The evaluation specifications consists of requirements related to the requested product or service. All evaluation requirements must be linked to an award criteria. The providers' response to the evaluation requirements is the basis for grading. Sum of all evaluation requirements, multiplied by respective weighting, gives the winner of the competition. Strategic importance and the market situation will be decisive for which weight the different elements receive.

Types of tender procedures

Furthermore, as mentioned in the literature review, there are several forms of awarding contracts which can be used depending on the procurement's cost (Difi E 2020). These include open and restricted procedure, competitive negotiated procedure, competitive dialogue, design contest and innovation partnership (European Commission 2020).

Partial offers and product groups

A tender can be divided into several partial offers. Each part offer will then be evaluated separately and different suppliers may be selected for various part offers, making it possible for smaller companies to participate in tender. In order to sort large competitions with a broad product range, it is common to divide the goods into different product groups. Often, each product group may constitute separate sub-offers.

Publication of tender

The publication of the tender is posted through the website Merccell and on to the Norwegian announcement website for tender Doffin ("Doffin" n.d.). Merccell is a tender implementation tool or solution that ensures that the public bidding process takes place digitally, clearly and securely in accordance with current legislation (Merccell n.d.). If the procurement is above EEA threshold values (Difi F 2020), the announcement of tender

needs to be published to TED, the European Union's announcement website for tender, so that international companies also can contribute (Difi D 2020).

3. Evaluate offers and award agreement

After the offer deadline has expired, the bids received are compared and assessed against the award criteria's and predetermined specifications (Difi 2019). In all of these stages, the major principles within Norwegian public procurement, obliged by the European Union's directives, has to be followed. The core in these principles are recognition, equal treatment, transparency and proportionality (European Commission A n.d.). These principals are established to secure equal opportunities for the suppliers in the European Union, hinder discrimination, achieve sound procedural management and secure visibility in the processes, as well as securing that reasonable requirements and conditions are imposed on the supplier (Weele 2018). These principles concern procurements above 100.000 NOK, which includes all the procurements SIK executes on behalf of the hospitals (Regjeringen 2017)

In some cases, where the products are not familiar to the hospitals, or where new products or technology have entered the market, product testing is necessary. Then every hospital involved in the procurement receives the products from the various suppliers, conducts testing and then assesses the products against the predetermined specifications.

Furthermore, there are different ways of evaluating the supplier, which were briefly mentioned in the literature review (Difi 2019).

4. Complete and sign agreement

The last step is to complete and sign the agreement. For transparency, a letter needs to be sent to every participant in the tender. This letter needs to state why the supplier were not awarded the contract, which is in-line with the principles from the EU directives.

Follow up agreement, supplier and market

“Follow up agreement, supplier and market” handles the evaluation part of the procurement, which will not be focused on.

5.0 Findings

In this section the findings from the chosen procurements are presented. Quotes are also included from the procurement advisor responsible for that exact project. In all the six procurements total cost of ownership has been used.

Project A

Project A consists of a serology instrument with the adjoining instrument dependent consumables in division Vest. This project is a local procurement involving Haukeland University hospital. With only one hospital involved, the complexity of the procurement was reduced, and according to the advisor, made it easier to satisfy the customers' need. The more hospitals involved, the more difficult it becomes to meet their need, especially if they evaluate the suppliers differently after testing the products.

The form of competition used in this tender is open procedure towards a single offer from a supplier. In total, three suppliers participated in the tender. In the stages from establishing the specifications and conducting the evaluation, four representatives from the hospital were involved. As this was a local procurement, all the representatives were from the same hospital. These were employees from the medical technical department, two from the information and communication technology- department, and the project leader which is the advisor from SIK. The interviewee reported engagement among the representatives and stated that it was easy to get in touch with the involved parties.

During the initial stage the procurement need was specified, and any required clarifications and explanations were solved during the first start-up meeting. In total, 39 minimum specifications and 38 specifications for evaluation were established through interactions with the representatives. When asked if there were any unnecessary specifications, the advisor answered:

“Ehmm, I considered that in this case all the requirements were well thought out and necessary. But if possible some of the requirements could have been merged into the same requirements. For example we had many information communications technology requirements so maybe some of them could have been combined into fewer requirements”.

The representatives from the hospital had substantial knowledge of the supplier market, and it was therefore decided to not conduct market dialogue. All the necessary information about the products was provided through the bid, where the advisor reported that product demonstrations were not imperative due to the description of the equipment by the suppliers.

According to the procurement advisor in this project, there were no challenges among the usual:

“Ehh. As far as I can remember, we had no major challenges beyond the usual challenge, which involves customer satisfaction and also that the market is satisfied with the completion of the competition. These are the challenges we always have. But no particular challenges in this case”.

The advisor also highlighted that the representatives from the hospitals are very dedicated and engaged, responding quickly to any questions and clarifications.

Furthermore, when asked which phase that was most time consuming the advisor answered:

“It was time-consuming to put in place a good requirement specification because we did not base it on any previous procurement..... I was in all the meetings where we sat and worked together in team and came up with all the requirements in the meeting. Or the professionals made all the requirements but I formulated them ...”

In the meetings the specifications were established with the representatives involved. A total of 16 questions towards the specifications were raised by the suppliers, which according to the advisor could indicate some ambiguities among the suppliers. The supplier Abbott was awarded the contract, where the advisor stated:

“In regard to the equipment, the consumable material turned out to be cheaper than initially budgeted. This is due to the fact ehh, that we think in the recent years the competition in this market area has increased. So even though the same supplier was chosen as previously, the prices were much lower.”

An identified improvement that was established after executing this procurement is that the procurement advisor now lets the representatives come up with the specifications before the start-up meeting. The advisor states:

“An effective measure that I have used is that I have given the team the responsibility to work independently with the requirements specification, while I take care of all the other documents. We meet again when they have come up with a complete draft of the requirements specification, instead of me being in all the meetings and working on the specifications. This is quite effective for me that I have the start-up meeting and then set a deadline for when the draft requirements specification should be ready. Then I can edit it, so that we can meet again and .. complete it instead of having many meetings with me and the whole team”

By having the representatives establish the specification beforehand, increased efficiency in the meeting is achieved.

Furthermore, a standard document with the common specifications has been established in division Vest. This is according to the interviewee a document to make it easier to identify all the necessary and adequate specifications in the different procurements. During this procurement the specification document was used to identify the mandatory medical technical requirements. However, as the document is not comprehensive enough, most of the requirements specifications were established within the team.

Project B

Project B is a similar acquisition of serology instruments from division Midt-Norge. The most significant difference from project A is that this project is a regional procurement involving two hospitals, which are St. Olavs Hospital, and Helse Møre and Romsdal HF. Due to changes in the specifications, and victory to a supplier that did not, after all, satisfy the minimum specifications, the procurement was published three times on Doffin.

Before the procurement was published, a dialogue conference was organized to map the market. According to the advisor, this was essential as the market had changed from the previous tenders. Previously, one of the suppliers had the market leading analytical repertoire and technology. However, this had changed, where new competitors had entered the market with the appropriate technology. Thus, the advisor stated the following:

... “New players had entered the market, so that was why a dialogue conference was held to establish “what is out there now,” which was a bit special” ...

Through Mercell which was further published to Doffin, the suppliers signed up for the dialogue conference, that lasted for two days. In total, five suppliers participated. As the specifications were not established before the meeting, the suppliers gave input on what should be included as to what they had to offer. According to the advisor they gave valuable feedback. The advisors also talked to the suppliers for one hour each in private.

In total, three suppliers delivered a tender, Abbott, Siemens and Rosch, resulting in competition. The first time the tender was published on Mercell, one of the suppliers pointed out that the specifications were too comprehensive. Emphasis on quality in the specifications was highly valued by one of the representatives. According to the advisor, the findings were that this was unnecessary. He stated the following:

“... we discovered that if you are within a certain quality area, then it is indifferent whether you are here or there. For example, if you have 0,01 or 0,09, it is pointless to score on it. So then we cancelled the tender, removed those points, and published it again....”

The cancellation resulted in a second publication of the tender, where a couple of days extra work occurred. Due to the quick feedback from the market, the time lost was kept low. The second time it was published, the specifications were completely changed.

Furthermore, the second time the tender was published on Merccell, the supplier Rosch made a mistake. In total, the supplier Rosch scored the highest by evaluating the price and quality. Not long before the contract with Rosch was supposed to be signed, the advisor at SIK noticed that one of the minimum specifications was not fulfilled. This resulted in another cancellation of the tender.

The third time the tender was posted on Merccell, the specifications resulting in Rosch not being able to participate was changed. Some of the specifications, including the minimum specification resulting in a cancellation of the past tender, were changed from need to should. This time, the winning company, Abbott, had substantially decreased their prices from the previous tenders. Compared to Abbott's previous contract on serology instruments in region Midt-Norge, the prices in the new contract were reduced by half. Here, the advisor stated that price was the determining factor:

“... Abbott had the best price and actually scored highest on quality. Rosch had a higher price and Siemens even higher. Ehhh, on quality, they were between 10 (Abbott), 9.70 (Siemens), and 9.90 (Rosch) quite marginally, so it was the price that was conclusive, it was a big difference....”

The quality was higher for Abbott as they scored higher on the specifications that were changed from need to should. Hence, these specifications went from minimum to evaluation specifications.

In this tender, quality and price were both weighted 50 percent each. This was according to the advisor, a tactic to avoid any of the suppliers reducing the price to win. Referring to the statistics in the three chosen procurements from Midt-Norge, their usual strategy, as seen in the two other procurements, is weighting 60 percent on price and 40 percent on quality. In this case, if they would have followed the regular pattern a supplier with a lower price could obtain the contract despite lower quality.

The number of minimum specifications in the third tender were 19 and evaluation specifications were nine. These were inspired by looking at previous similar procurements in other divisions. In total, the involved user group consisted of nine people, one superior doctor, bio engineer and department leader from both hospitals, and one from information communications technology and the medical technical department. The advisor stated in

the interview that 90 percent of the used time is in the start-up phase. Further, to reduce the amount of time spent on a procurement, the advisor did the following:

“... I Attempt to organize all the secretary work so that the professionals spend time on the technical specifications. In the evaluation specifications we try to score and describe by words what makes someone the best and what makes someone worst, which is sent out in the award letter. The evaluation is very important and it is essential to have enough time to evaluate the supplier.”

When asked if the need was appropriately defined the advisor answered:

“The need was well defined, but in the first rounds the requirements for the specifications were too extensive with many requirements. Some of them were, as mentioned, not suited to differentiate between the providers”

There were several questions to this tender, however, as it was posted three times the amount of questions were reduced from each time. During the interview the advisor highlighted the importance of feedback from the market. Quick feedback from the suppliers resulted in not much lost time from the first publication on Merccell to the second. Here, room for improvement was therefore according to the advisor pre-posting of the specifications to receive supplier feedback. After the market dialogue was conducted the specifications should have been sent to all the involved suppliers for consultation. This could have resulted in one less publication. The advisor stated the following:

“In retrospect, we have included proposed specifications when we arrange dialogue conferences so that the suppliers can give input”.

Project C

Project C is a regional procurement of consumable test tubes involving all the hospitals in division Vest. These include Helse Bergen, Helse Førde, Helse Fonna, Hospitalet Betanien, and Helse Stavanger HF. The extensive involvement resulted in a comprehensive procurement with a high value. Initially, the procurement was started in 2016. However, due to turnover in procurement advisors, the procurement was not published and finished before 2018. The advisor states that she received the documents for the procurement in November 2017, where the process was evaluated in July, and the contract signed in the middle of August 2018.

Due to local differences in the instruments and procedures used, the hospitals had to be divided into two geographical areas. Helse Stavanger HF in geographical area two, and the rest in geographical area one. The reason for the division was to assure that the right products in the necessary partial offers were demanded toward the right area.

In total, the procurement consisted of nine partial offers. The more partial offers, the more complex the procurement is, which is due to the possible increase in number of suppliers resulting in more contracts, and thus more administration. According to the advisor it is therefore important that the partial offers are suitable, both in relation to the need and the market. This amount of partial offers also generates more work and it is therefore essential to create a good overview when obtaining offers and evaluating them. Among other things, the advisor stated:

“..... Because there are nine partial offers in the procurement, it was important and challenging to have control over what consumables we should have and to divide it into the correct classifications....”

One representative from each hospital and from the department of medical biochemistry in Stavanger and Bergen were involved in the meetings. As this procurement had been started in 2016, the advisor could use the previously agreed upon specifications and further develop them. Also, due to useful knowledge and competency on the products being procured among the representatives, it was concluded that a market dialogue was not necessary.

Through Skype, the advisor conducted all the five meetings with the representatives, which lasted from one hour to one and a half. Further, establishing the minimum and evaluation specifications was done in the first meeting. In the second meeting, verifying the fulfillment of the minimum specifications was conducted by checking the suppliers' documentation. In the third meeting, the focus was on the evaluation specifications. Here, it was identified that cancellation of a partial offer was necessary as the wrong product was requested. During these phases product testing was agreed upon and seen as necessary. The products were then evaluated after testing, followed by the final evaluation meeting where the suppliers for the different partial offers were chosen based on the result.

“... The minimum specifications involved the actual, what should I say, the quality of the product itself that must be fulfilled. Also, the specifications for evaluation was more focused on how user-friendly and functional the products are in laboratory processes. That the consumables should yield good results so that the personnel can be confident about the results they get”.

It was concluded that it was unnecessary to conduct product testing where the representatives already had substantial knowledge of the products. Hence, testing four out of nine partial deliveries of essential consumables was considered appropriate, where they were tested and evaluated at the hospitals by using adequate evaluation forms. Several tests were conducted in the laboratory to establish the degree of quality, user-friendliness, and test results using the consumables. The various hospitals gave the different products contrasting scores. Meaning, that one hospital could give a product a high score on user-friendliness while another could give low scores. This was, according to the advisor, due to the different procedures and instruments used. The advisor stated the following:

“... It is always a challenge to know how to evaluate and how to give points and get the right picture of the procurement.. But I think most of it is about involvement to establish the right foundation....”

The different evaluations, in addition to the reasons mentioned earlier, made it convenient to divide it into partial offers. Thus, according to the advisor, partial offers were crucial to achieve agreement among the hospitals and customer satisfaction so that the hospitals received the appropriate consumables.

Another challenge in this procurement was according to the advisor involving the right employees at the right time. Employees responsible for the stock supply should have been involved earlier to create a conversion list from the previous products to the new ones. This is to make sure that the right products are acquired and that they can be implemented in an appropriate manner. The advisor states:

“... If we involve everyone in the beginning the implementation becomes easier. However, in this competition I fell behind on the involvement. It was a new area where I did not involve the employees that had an overview of what consumable equipment we actually needed, so implementation did not go well. We did not have a conversion list so we did not know which products the new procurement replaced....”

It was not enough to use the representatives in the project group to provide the information to the stock supply employees. Thus, room for improvement stated by the advisor was to inform about the new deal earlier to create a conversion list from the old products to the new ones.

Throughout the tender process, the suppliers raised a couple of questions. It was according to the advisor questions of a small impact where ambiguities were corrected. None of the questions extended the offer period.

In this procurement, the most significant challenge was structuring all the partial offers in the right way and identifying the need for the different products in the laboratories. Thus, the start-up meetings were the most time-consuming. When asked what the bottleneck in the procurement processes are, the advisor stated:

“I spend the most time on, which I always come back to, the preparation of the requirements specification. You must really know the need and be able to specify it at the right level and in the right way, which is time consuming. The actual execution of the competition, the announcement and everything before receiving offers goes relatively smoothly. However, it depends on how extensive the procurement is.”

The procurement advisor also stated that if anything should be done differently then she would have conducted a market dialogue, or more concisely a guidance announcement:

“Guidance announcements can also be sensible to receive feedback from the suppliers. Are the partial deliveries divided correctly? ... It is possible to have a competitive basis for consultation as well in regard to the specifications».

Project D

Project D, procurement of consumable test tubes in division Midt-Norge was a collaborative procurement including division Nord. The supplier market consisted of three to four suppliers, which were familiar to the representatives from the hospitals. Limitations with regards to the already installed instruments at the different hospitals created guidelines for the partial offers. Meaning, that the partial offers had different specifications depending on what the hospitals instrument and personnel required. All the suppliers delivered a tender, resulting in competition for some of the partial offers. For which exact offers that received several bids is not known. The end result of the procurement revealed a lower acquisition cost than budgeted.

Here, two representatives from Midt-Norge and Nord, as well as both advisors from SIK were included in the project group. The different hospitals in the regions were represented through these representatives. The advisor stated: *“... we decided we would bring as few people as possible because there were well-known products...”*

In contrary to the representatives from division Nord, the advisor and project participants from the hospitals in Midt-Norge had relevant experience as they had previously conducted a similar procurement. According to the advisor from Midt-Norge, the representatives from Nord also had less authority. The advisor stated:

“I always have someone with me who has authority, such as a section manager. This is because I think it is easier and that they can rather get in touch with their professionals at the hospitals.”

In total, two days were used to develop the specifications with the project group where they had physical meetings. However, for the two advisors from the divisions it required more work. Both before and after meetings were conducted online to make clarifications. The specifications established in the meetings had to be further discussed with the

professional environment at the various hospitals, resulting in some adjustments after the meeting. In total, seven partial offers were developed.

Some issues arose during the evaluation. When conducting product testing, the different bioengineers evaluated the products differently. The advisor stated:

“... it was very strange for us when we saw that one group could give a high score on a product and the other group could say that the same product was almost useless. However, we knew it was useful in many places all over the world, so there was nothing useless. So we had much trouble understanding the evaluation even though we had spent significant time talking about it...”

The dissimilar evaluation resulted in further communication with the professional environment, where the importance of not being too strict was reiterated. If a product was commonly used in the rest of Europe, one could question why the professional environment at the different hospitals gave it a low score. Learnings from this procurement were, according to the advisor, that the procurement was more time consuming than first estimated. Both the advisors from Midt-Norge and Nord had to further, in-depth analyze the standard evaluation form and put them together.

When asked if the evaluation is subjective, the advisor stated:

“Yes, it is incredibly subjective. There is a lot of "user friendliness" here and because if we set up specific sub-points that we emphasize, the supplier that is "inside" will probably always have an advantage; unfortunately. As project managers, we try to equalize that with... questions; own experience; examples etc.”

One question from a supplier resulted in the removal of a specification. The requirement was not relevant and, hence, was removed. The removal did not result in more suppliers being able to contribute in the tender.

In this competition, it was necessary to use two contract templates due to differences in the divisions. The reason for these two contracts is the regional health authorities need for approval. The different divisions' contracts were not authorized by the other division as there were some differences in the conditions. Meaning that, it did not exist a common

national contract template. *“It was too time-consuming to make a temporarily common contract for these two regional enterprises (foretak)”*. It was also stated that the contracts were not that dissimilar. However, according to the advisor, this created a couple of questions from the supplier. The supplier also stated that this was adverse. However, after explaining the circumstances, the supplier accepted the two contract templates.

Project E

Project E is a local procurement of a rotation microtome in division Vest where a tender request was sent to four relevant suppliers. Only one supplier delivered a tender. In total, 14 minimum specifications and ten evaluation specifications were established. No questions were raised from the suppliers, which could indicate that none of the specifications were unclear.

According to the advisor, it is questionable why only one supplier delivered a tender when the other three also were adequate suppliers. It was a familiar market and, thus, appropriate to send a tender request to the relevant suppliers and not have an open tender. According to the advisor, it is appropriate to use this form of competition as long as it:

“is only one company that needs a limited number of products, the result is a relatively low value. If you know the market well and know which suppliers are relevant, this is a straightforward way to conduct the competition.”

Due to the supplier knowledge, market dialogue was not conducted. The demand was for a call option and two instruments.

The procurement consisted of a small project group where one representative from pathology- and one from the medical technical department was involved. In Sharepoint, an online website for sharing documents, the user group could at all times see the updated specifications and make changes to the documents. Furthermore, the price of the instrument was within budget and met the requirements for quality and price. According to the advisor, preparing the basis for the competition is generally the most time-consuming phase, which it also was in this case.

If anything had been done differently in this procurement, then according to the advisor, it would be to contact the suppliers and ask why they did not get involved in the tender.

The start-up meeting was conducted in the beginning of May and the deal was activated and the end report was written in the middle of July, resulting in a project duration of approximately two and a half months. According to the advisor this was an efficient procurement as the need was clearly defined. Less time was also spent on the evaluation as only one supplier delivered a tender. However, the advisor wished that more suppliers had delivered a tender to increase the competition.

Project F

Project F was a procurement of two rotation microtomes in Midt-Norge, where a tender for a manual and an automatic rotation microtome was requested. Thus, the request for tenders was divided into two partial offers where different suppliers could be awarded the contract. Altogether two suppliers were involved in the tender. A third supplier was interested but could not meet the minimum requirements, which, according to the advisor, were necessary minimum requirements. Because of this, the requirements could not be removed to increase the competition.

The project group consisted of four people, two from St. Olavs, one from Ålesund, and the project leader from SIK. When asked if they gathered inspiration from other similar procurements, the advisor answered:

“Ehhh, yes, we found an old requirement specification on microtomes, which was our starting point. We further improved and rewrote it by retaining the relevant points, added (specifications) if needed, and also removed points that were inapplicable.”

Market dialogue was not necessary as the procurement was of low value with familiar technology and a good knowledge of the market. In total, 13 specifications for the evaluation were established. The requirements were clear and distinct. Too many requirements could, according to the advisor, result in each requirement receiving low

weight in the evaluation. Therefore, only the critical evaluation requirements were included to achieve the applicable weights:

“You need to find a balance where you have sufficient evaluation requirements that make sense. Also, manage to, eh, what to say, limit the number of requirements so that each requirement matters.”

No questions were raised for the tender. The advisor further states that he sees the value in market dialogue as well as requesting feedback on the specifications before publishing the competition:

“No market dialogue, not in this procurement. I have other procurements where I engage in dialogue with the market, send out requirements specification on consultation, and so on. I see that it is valuable, eh, but it is, but it is, and yes, I was going to say delaying, a delaying process, whether the extra time it takes to submit the requirement specification to the consultation is greater or less than the time we would subsequently spend answering questions, is a bit difficult to say.”

In this procurement, the estimated needed volume of microtomes was six. However, only two were bought with one call option. When looking at the procurement now, the advisor stated that it might have been just as efficient to have completed three separate procurements. According to the advisor, this volume, with either six or one microtome in the procurement, does not give large economies of scale. Meaning, according to the advisor, one competition for each microtome might have been adequate in this case.

6.0 Discussion

The following section will discuss and try to answer the research questions. To answer the research questions the barriers will first be discussed, success factors and then the improvements are suggested as to how SIK can avoid the identified barriers.

6.1 Barriers

The gathered data suggests the following as barriers to efficient procurements.

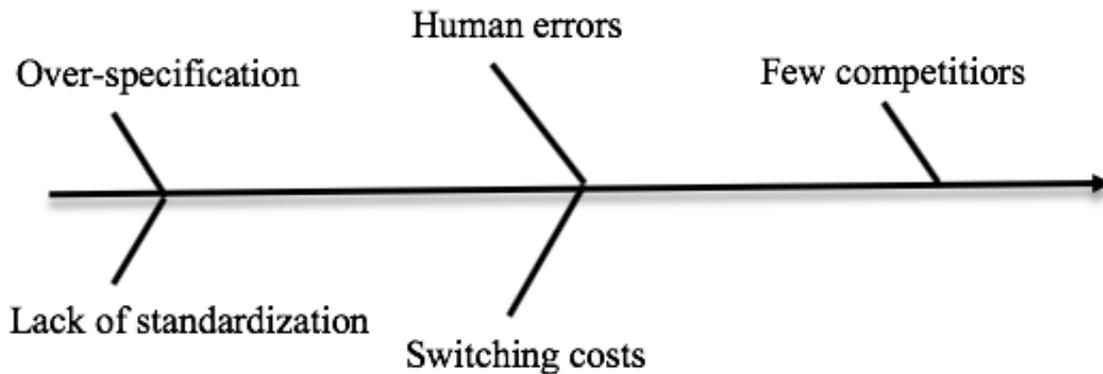


Figure 7: Barriers to efficient procurement (Own production)

Over-specification

Project A and B are fairly similar in regard to complexity and requested products. However, Project A has more specifications than B, making it questionable whether project A has unnecessary many specifications. In total, project A had 20 more minimum and 29 extra evaluation specifications compared to project B. Weele (2010) puts emphasis on the danger of over-specification in the specification phase, which could lead to fewer suppliers being able to deliver the demanded product, resulting in less competition and higher prices (Weele 2010). The same supplier were chosen in both of the procurements, revealing that the chosen supplier was most suitable in both cases. It was also no difference in the number of suppliers participating in the tender, and in both of the projects they accomplished a lower procurement cost than in the previous contract. Even though all the extra specifications most likely did not result in higher prices, including

more specifications than necessary, could arguably be a barrier as it requires more administration.

In the initial tender request in project B, they also identified that the requested product was over-specified. The tender was cancelled, changed and then re-published to Doffin with new specifications. The advisor stated the following:

“... we discovered that if you are within a certain quality area, then it is indifferent whether you are here or there. For example, if you have 0,01 or 0,09, it is pointless to score on it. So then we cancelled the tender, removed those points, and published it again....”

This is arguably one of the barriers to efficient procurement due to the extra resources used on the projects. In project A it resulted in more work in regard to evaluating and checking that the minimum requirements were satisfied while in project B it resulted in a cancellation.

Few competitors

According to Grega and Nemeč (2015), competitiveness has a great impact on the final price of the procurement. The findings from the research conducted reveal that in project E only one supplier participated in the tender, while in project F one supplier participated for each partial offer. Meaning, that one supplier signed the contract for the automatic while another for the manual rotation microtome in project F. The lack of competition in both of these cases could have resulted in higher prices.

Onur, Özcan, and Taş (2012) study reveal that the higher value the more suppliers participate in the tender. Both of these procurements were of low value, meaning that this could have impacted the amount of suppliers that participated. The value of the procurements were within the public procurement regulation part 1, meaning the procurement were between the threshold value of 100.000 and 1.300.000 NOK (Regjeringen n.d.). Furthermore, it was stated by the advisors that it was four possible suppliers while only one participated, which means that the low value could have affected the number of participants in the tender, which again could have affected the acquisition cost. Few competitors are, therefore, arguably one of the barriers to efficient procurements as it can lead to higher prices.

Human errors

In project B the award winning supplier stated that all the minimum requirements were fulfilled. Right before the contract was supposed to be signed, it was identified that the supplier did not fulfil one of the stated requirements, which resulted in a cancellation of the tender. This is arguably a human error from both the supplier and SIK's side as it was not detected at an earlier stage.

In Project C it was also requested the wrong product, leading to a cancellation of the partial offer and a re-publication of that exact product.

Another human error that indicates the consequences of poorly executed early phases of the procurement process was the challenge in project C. In this case the right employees were not involved at the right time. They did not receive the necessary information to create a conversion list from the old products to the new ones. Meaning, that the employees at the hospitals did not know which products the new procurement replaced. Here, information sharing, or in other words coordination could have been improved. This is arguably a human error as the involvement was forgotten. All of these cases are related to human error which is arguable a barrier to efficient procurement and is difficult to avoid.

Switching cost

In project D, after product testing, the various hospitals evaluated the products differently. The products the different hospitals were used to could have impacted the result of the evaluation, where more familiar products could have received a higher score. In the interview, the procurement advisor stated that the hospitals use various procedures and instruments. When asked if the evaluation was dependent on the subject, the procurement advisor answered the following:

“Yes, it is incredibly subjective. There is a lot of "user friendliness" here and because if we set up specific sub-points that we emphasize, the supplier that is "inside" will probably always have an advantage; unfortunately. As project managers, we try to equalize that with... questions; own experience; examples etc.”

The findings from (Blut et al. 2015) study revealed that relational switching costs have the strongest association with repurchase behaviour. Thus, it is questionable whether familiar products or brands received a higher score, while the opposite occurred for unfamiliar products, and hence, impacted the result of the evaluation.

Lack of standardization

Due to regional differences in project D, two contracts were used for the involved divisions; Nord- and Midt-Norge. This could indicate a lack of standardization within the organization.

Furthermore, to reduce the amount of partial offers, and, thus, contracts, and achieve economies of scale, standardized instruments should be adopted in the hospital.

Diversification on the instruments and procedures used, could arguably lead to inefficient use of resources. As mentioned in project C and D, it was very contrasting evaluations which could questionably be due to the differences in procedures and instruments used. The lack of standardization could arguably be a barrier to efficient procurements as it increases the amount of resources used.

6.2 Success factors

The following section will present the identified success factors to efficient procurements.

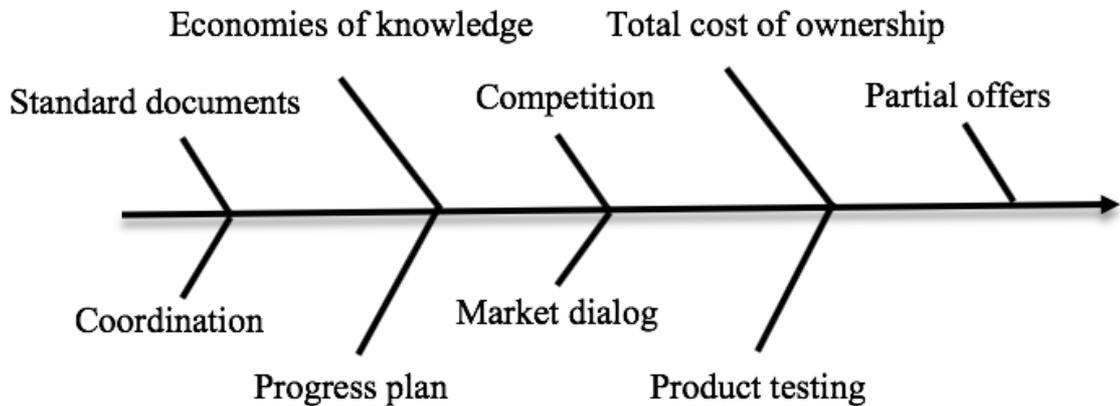


Figure 8: Success factors to efficient procurement (Own production).

Standard documents

Including the standard document that is used to present the tender, it also exists a document with the common specifications. By using this document, the procurement advisors can assure that none of the most important specifications are forgotten. Further, save time as the appropriate specifications are identified by looking at the document. This was done in project A.

Economies of knowledge

The economies of knowledge achieved through centralization by working toward laboratory products is arguably a success factor to efficient procurements as it reduces the time used on each project due to the acquired category-specific experience and process knowledge (Karjalainen 2011).

Total cost of ownership

All the procurements put emphasis on the TCO of the acquisition and not just the price for the initial product. This is highlighted by Weele (2010) as important to reduce the amount of unexpected costs. If SIK only looked at the price of the product the supplier could adjust the prices and provide a cheap price for the initial product and higher prices for

maintenance, spare parts and so forth (Weele 2010). Thus, looking at the TCO can be seen as a success factor to efficient procurement as all the costs are considered.

Coordination

In every procurement, a project group is established to involve the relevant employees from the hospitals, which also can be seen as SIK's customer. In this way, the customer is involved in the procurement process. By also conducting a market dialogue the supplier is involved and can provide SIK with important information on the products they offer. Increased coordination and a better relationship throughout the supply chain can result in lower transaction costs between the stages (Chopra 2016). In most of the projects the information sharing went smoothly, resulting in the different actors receiving all the necessary information. In project A the procurement advisor highlighted the positive commitment from the representatives. He stated the following:

“The professionals at the labs in Helse Vest are very dedicated, meaning that we advisors, receive quick help with any questions we have. And the projects can be completed quickly because the professionals respond quickly to tasks that they have in the project group.... It was easy to obtain representatives from the hospital who could participate in the project group. Everyone is engaged.”

Quick response and engagement among the representatives is also emphasized by several of the procurement advisors. Hence, good coordination is arguably a success factor to efficient procurement.

Market dialogue

Holma et al.'s (2020) study analyses stakeholder involvement in public service specification. The chosen procurements from SIK involves purchase of goods and not services as in Holma et al.'s study. However, their findings could arguably be relevant. Their findings reveal that the early involvement is lacking, and that *“the more fixed a plan is when first presented to stakeholders, the fewer opportunities there are for the stakeholders to make a significant contribution to the content”* (Holma et al. 2020, p. 12). In project B, the specifications were not developed before conducting a market dialogue, which could result in the advisors being more openminded to the different product solutions and potential specifications. They then received input on what should be included as to what existed in the market in regard to what the suppliers had to offer. However, even

though a market dialogue was conducted, the result was still over-specification which resulted in a cancellation.

Several of the advisors have also stated that a market dialogue was unnecessary as the representatives from the hospitals already had a good knowledge of the market, thus, it is important to evaluate the necessity of a dialogue. When used correctly, to gain knowledge of the market, arranging a market dialogue could be a success factor as it identifies the market situation.

Partial offers

The appropriate number of partial offers are emphasized by several of the procurement advisors. Too many partial offers result in extra administration of the contracts and inefficient use of resources. However, too few partial offers can result in reduced customer satisfaction as the hospitals have different needs due to various procedures and instruments. Partial offers are also, according to one of the advisors, important in providing smaller businesses with the opportunity to participate in the tender. Hence, when used correctly the partial offers can be a success factor to efficient procurement. As stated by the procurement advisor in project C:

“There is no maximum limit for partial offers. What is important is that the partial offers are appropriate both in relation to the need and the market. Nine partial offers were not too much in this procurement, but the more partial offers the more to administrate. Meaning, that it can generate more work, but at the same time create a better overview in obtaining offers and evaluation.”

It is also stated by another procurement advisor that the partial offers are essential in achieving customer satisfaction when for example the procedures and instruments used are different.

Competition

In project B it is stated by the procurement advisor that the prices from the previous contract were twice the price of the new contract. He further states that it could be due to the increase in competition. This is supported by Gupta's (2002) findings which revealed that an increase in the number of participants in a tender from two to eight resulted in

savings. A study on competitiveness conducted by Grega and Nemec (2015) supports this. Grega and Nemec reveals that competitiveness has a great impact on the final price of the procurement. As the market situation had changed from the previous tender, where the other two suppliers now had a competitive technology, the competition increased.

The advisor in project A stated that the price was also reduced in their procurement of the serology instrument:

“In regard to the equipment, the consumable material turned out to be cheaper than initially budgeted. This is due to the fact ehh, that we think in the recent years the competition in this market area has increased. So even though the same supplier was chosen as previously, the prices were much lower.”

Another factor that is highlighted by Onur, Özcan, and Taş (2012) that impacts the competition is the value of the procurement. The higher the value the more likely that more suppliers participate. In project D, the previous similar procurement conducted was a regional procurement involving only Midt-Norge while the new involves Midt-Norge and Nord-Norge. The procurement advisor stated the following:

“Yes, all the relevant suppliers participated in the tender, since it is quite important for them, because it is almost half the market in Norway, not the exact half but a large share of the market ... From the numbers we had from each of our divisions, we actually got a profit, we got better prices” .

The size of the contract could have increased the number of participants in the tender, which again could have impacted the final price of the new contract. Thus, competition is a success factor to efficient procurement.

Product testing

In both Project C and D, product testing were conducted. According to the advisors, by conducting product testing the most adequate products could be identified in regard to the evaluation specifications. It also provides the opportunity to try the new products which has entered the market. Hence, when it is new products in the market, product testing can be a success factor to efficient procurement.

Progress plan

One of the procurement advisors further highlights the importance of a establishing a good progress plan that will be followed. Through a good progress plan the necessary resources are planned for (Väinämö and Torvinen 2016). For example in project E everything went smoothly, an all the appropriate resources were planned for.

6.3 Improvements

This section will discuss several recommended improvements for SIK.

Market dialogue

An improvement in project C, highlighted by the advisor, involved publishing a guidance announcement on Doffin requesting for information from the suppliers. The user group had a good market overview, and was acquainted with the suppliers and existing products. However, the advisor stated that she could have gathered more information on the market. A dialogue conference could also have been conducted to inform about the procurement at an early stage. She stated the following:

“Guidance announcements can also be sensible to receive feedback from the suppliers. Are the partial deliveries divided correctly? ... It is possible to have a competitive basis for consultation as well in regard to the specifications».

Using a guidance announcement could have helped avoid the barrier of human error, where it was requested the wrong product. This mistake could have been identified earlier, possibly before publishing it to Doffin, by using guidance announcements. Furthermore, several of the advisors have highlighted the possibility of publishing the specifications to consultation on Doffin. Then, SIK can receive feedback on the established specifications.

This is also relevant in project B, where supplier feedback could have resulted in unnecessary specifications being identified at an earlier stage. Thus, guidance announcement can also help avoid the barrier of over-specification.

Increasing the bundling of products

Furthermore, in project D, the advisor stated that the next time the same procurement is executed it should be done national instead of regional. The effects of centralization is highlighted by Karjalainen (2011) where the larger number being procured could result in higher economies of scale. By merging it together to one procurement SIK can achieve improved use of their resources as the procurement process would only have to be conducted once and not one time for each division. This would help increase standardization as all the hospital would then possibly use the same products.

Specifications

The procurement advisor in project A stated that an improvement implemented in the projects he is responsible for, include making the representatives from the hospitals establish the specifications before the start-up meeting. In the other analyzed projects the specifications are established together during the start-up meeting. By making the representatives establish the specifications before the meeting, increased efficiency might be obtained. However, he states that it is possible due to the representatives from the hospitals procurement experience, and that it could be more difficult where the representatives have not been involved in many procurement processes.

Increase competition

One of the discussed barriers to efficient procurements are few competitors. This can be, according to Borowiec (2017) improved through eliminating barriers in accessing tenders, initiatives to hinder the development of anti-competitive agreements and reducing the cost for contracting authorities and contractors to increase efficiency. As identified by Onur, Özcan, and Taş (2012) the higher the value of the contract the more likely it is that more suppliers participate. By increasing the buying scale through national or regional procurements, more competitors will possibly participate in the tender as the contract is of a substantial value. More activities should also be arranged to increase the market competition, for example through increasing innovation, which leads to the next section.

Innovation

Väinämö and Torvinen`s (2016) findings revealed that end-user involvement should be more adopted in public procurement as it leads to increased effectiveness and improved solutions through innovation. In the conducted product testing in the projects the existing products on the market were tested and evaluated. In Väinämö and Torvinen`s study, experiments while involving the end-users are conducted to find appropriate product solutions. This should be more adopted at the hospital and in SIK`s processes. If it is identified a lack of competition or not appropriate product solutions, similar experiments as in Väinämö and Torvinen`s (2016) study should be adopted. As previously mentioned in the SIK`s introduction, the company shall foster innovation. By letting the suppliers try end-user experiments their products can be improved and also new solutions to their products can be identified.

7.0 Conclusion

7.1 Research summary

In this thesis several barriers and success factors to efficient procurement have been identified, including some improvements. After analyzing six procurements from two divisions in Sykehusinnkjøp, the findings reveal five barriers and nine success factors to efficient procurement.

The barriers to efficient procurement include over-specification, lack of standardization and number of competitors, human error and switching cost. All of these has arguably a negative effect on the procurement and leads to reduced effectiveness as identified in the procurements. In previous studies, few competitors has been identified to lead to higher acquisition costs, while high switching costs could lead to familiar suppliers having an advantage over new suppliers. This has also been identified in the analyzed cases, where several suppliers with competitive technology in the market leads to a lower acquisition cost.

Furthermore, the identified success factors to efficient procurement involve coordination, a well-developed progress plan, market dialogue, product testing, market feedback, partial offers, standard documents, economies of knowledge, competition, and total cost of ownership. The appropriate number of partial offers can result in more competition as small and medium enterprises can participate in the tender. When used correctly it can also increase customer satisfaction as the specific hospitals need can be satisfied. However, too many partial offers can result in increased administration of the contracts. Thus, it is a balance which arguably is a success factor to efficient procurements when used correctly. This also includes market feedback, market dialogue and product testing which is a balance that needs to be used adequately.

Recommended improvements for Sykehusinnkjøp include increasing innovation through end-user involvement, establishing a basis for getting the representatives from the hospitals to develop the specifications before the start-up meeting to increase effectiveness, and increase the bundling of products to achieve higher economies of scale. Another improvement involves increasing the use of market dialogue by publishing

guidance announcements requesting for feedback on specifications and requesting information from suppliers. Unnecessary human errors could then possibly be avoided.

7.2 Managerial implications

There are several findings of barriers and success factors to efficient procurement in the analyzed procurements from Sykehusinnkjøp. As they have been identified it is important that SIK and other similar companies that are under the Norwegian governmental regulations are aware of these factors. Awareness can help avoid similar situations reoccur, and possibly increase effectiveness. However, to generalize the result and implement it into similar businesses it is important that they follow the same regulations and have somewhat similar processes as mentioned in the case description of Sykehusinnkjøp. Every reader needs to keep these circumstances in mind when deciding whether it is applicable to their organization.

Different barriers and success factors were identified in various procurements, hence, it is not likely that all the barriers and success factors will occur in one procurement. However, by always reflecting and trying to identify the barriers and success factors, improvements can be identified. The findings revealed that if the company focus on increasing the competition in the market, and thus, increase the number of suppliers, it will likely reduce the products acquisition cost as it did in project B. Findings from previous studies also reveal that it is also more likely that more suppliers participate when the sum of the contract is high. Meaning, that by coordinating several procurements in different hospitals economies of scale are achieved as well as possibly more suppliers participating in the tender, further resulting in reduced prices, which was also arguably identified in one of the procurements. Thus, competition is one of the success factors to efficient procurement.

In response to the identified barriers and success factors to efficient procurements managers at different companies should be aware of these factors and also try to contribute to efficient procurements by implementing, where necessary, the improvements. The procurement managers should also map the current situation as to whether the success factors are well implemented in their processes.

7.3 Limitations of the study

There are several limitations to this study. Among other factors, the procurements are purely historical phenomena's. The oldest procurements were from 2017, and thus, could have been forgotten by the interviewees. Also, the methods used in the procurement processes could have changed where a decision made in 2017 could be different if it were made today.

Further, the study's results do not have the quality that this study should have in regard to generalizability. More cases should be analysed to see if the barriers and success factors are recurring. Some of the barriers and success factors were only visible in one of the procurements, whereas by analysing even more procurements it is easier to identify if these factors are recurring.

Another limitation of the study is that the customer satisfaction is not considered. As the customer, or the representatives from the hospitals, are involved in the whole process, and can provide feedback on the need and specifications, as well as decide on whether product testing is necessary, it was decided that interviewing the representatives were too time-consuming. However, the representatives involved could have been interviewed to get a broader perspective of the challenges faced in the procurements.

The last limitation was the ongoing COVID-19 pandemic. Due to a hectic period for Sykehusinnkjøp, it was challenging to get a response on the follow-up e-mails. Some of the responses could have been made in a hurry where mistakes could occur.

7.4 Suggestions for future references

This section will consist of a list of suggestions for future research. By presenting this list, other researchers have the chance to further explore the field.

The first suggestion for future research involves category management. Due to local differences at the hospital, where the hospitals have various preferences and use different instruments, resulting in various needs, the category management occurs on a regional level. It would therefore be interesting to research the potential benefits of category management on a national level.

Second, it would be interesting to analyse the benefits of regional versus local contracts. This would include analysing the time used on each tender, the necessary resources, economies of scale, to which degree the customers is satisfied, and more. For example investigate if it is more challenges involved in regional procurements compared to local, which only involves one hospital.

Third, replicate this analysis but include several cases in the different departments at SIK and not only the department of laboratory and medical technical equipment. Also, include all the four divisions if possible, to increase the generalizability and ensure significant results.

Fourth, to identify more improvements SIK's suppliers and customers should be involved. Interviewing these actors could result in more improvements being identified.

Fifth, specifically research some of the identified barriers or success factors to efficient procurement. For example focus on analyzing over-specification in SIK's procurements and its consequences.

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Appendices

Appendix A: Interview-guide

Intervjuguide

Generelt

1. Hvor lenge har du jobbet i Sykehusinnkjøp HF?
 - (dersom vedkommende har jobbet siden før sammenslåingen)
Har du merket noe forskjell etter sammenslåingen i 2015?
2. Hva er viktigst for dere som leverandør til sykehusene?
3. Hva er Lab avdelingens største utfordringer?
4. Hva er innkjøpsprosessens flaskehals?
5. Hva vil du si er en vellykket anskaffelse?

I forhold til de andre divisjonene

6. Samhandler dere mye med de andre divisjonene?
 - Hvorfor/Hvorfor ikke?
7. Har du inntrykk av at innkjøpsprosessen er ulik i de forskjellige divisjonene på avdeling lab?
8. Er det et konkret område du har inntrykk av at deres divisjon innen lab skiller dere ut på?

Forbedringer

9. Er det noen forbedringer du har identifisert som du ønsker gjennomført i anskaffelsesprosessen fra behovet oppstår til kontrakt er inngått?
10. Hva er utfordringene med å implementere denne endringen?
11. Noen effektiviserende tiltak dere har gjennomført det siste året?
12. Jobber dere for å redusere antall kontrakter?
 - Evt. Har dere noen konkrete tiltak?

Konkret mot en bestemt anskaffelse i produktkategorien Lab

13. Kan du i korte trekk forklare litt om denne anskaffelsen?
14. Hvordan var anskaffelsesprosessen her?
15. Hvilke og hvor mange brukere var involvert?
16. Var behovet godt nok definert?
17. Hvordan avgjorde dere minstekravene og evalueringskravene?
18. Ved fastsetting av krav ser dere på tidligere anskaffelser? Evt. anskaffelser i de andre divisjonene?
19. Når du nå ser på kravene er det noen krav som evt. ikke var nødvendige?

20. Hvilken konkurranseform ble tatt i bruk? /Anskaffelsesprosedyre?
21. Er den gjennomførte konkurranseformen vanlig i en slik anskaffelse?
22. Gjennomførte dere leverandørutvikling/dialog?
 - Hvorfor/Hvorfor ikke?
23. Ble det gjennomført utprøving/demonstrasjon av produktet?
 - Hvorfor/Hvorfor ikke?
24. Hvordan fastsatte dere kostnaden for anskaffelsen? TCO?
25. Var det mange spørsmål til konkurransen?
26. Noe som gjorde at tilbudsperioden var utvidet?
27. Hva var faktoren til suksess i denne anskaffelse?
28. Ble det gjennomført en endring som ikke var vesentlig?
29. Hvorfor ble denne endringen ansett som nødvendig?
30. Ble det bedt om begrunnelse utover den som var dannet?
31. Hva var den største utfordringen i denne anskaffelsen?
32. Hvordan håndterte dere utfordringen?
33. Hvordan løser man utfordringene?
34. Hva var mest tidkrevende?
35. Har du noen forslag til hvordan man kan redusere tidsbruken på en slik anskaffelse?
36. Dersom du skulle gjennomført samme anskaffelsen i dag hadde noe blitt gjort annerledes?

Er det noe du ikke har fått sagt som du tenker burde inkluderes?

