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A Qualitative Study of Improvement and Knowledge Transfer in Norwegian Public Hospitals

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PROBLEM DESCRIPTION

Knowledge sharing is recognised as one of the most important ways to improve organisational performance, and organisations strive to facilitate knowledge sharing routines, yet these attempts often fail. Knowledge-intensive industries, such as the health care industry, experience that lack of knowledge sharing and information transparency not only hinder the efficiency and effectiveness of their operations, but also their opportunity to improve vital procedures.

Hospital organisations should be expected to realise internal synergies by continuously learning from mistakes, making improvements, and transferring newly acquired knowledge between departments. Functional mechanisms for transferring best practises and experiences may help the departments realise their full potential in delivering optimised patient care.

In order to understand knowledge transfer processes between surgical departments in Norwegian public hospitals, a qualitative case study will be conducted.

PREFACE

This diploma work is the concluding part of the authors' Master of Science degree in Industrial Economics and Technology Management at the Norwegian University of Science and Technology (NTNU).

The authors would like to thank the academic supervisor Arild Asplund for help and guidance provided throughout the duration of the project. A special thanks is brought to support supervisor Lisa S. Græslie for being available and providing quick response, clear guidance and helpful inputs whenever needed.

We would also like to thank the 45 interviewees, kept anonymous throughout this study, for their time and contribution to the result of the research. The unconditional support, enthusiasm, and willingness to collaborate from interview objects and other health care professionals met along the way have made it possible for the authors to perform a comprehensive study. They have made the work easier and they deserve great admiration.

All help and contributions are highly appreciated.

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ABSTRACT

The Norwegian health care system is in rapid transformation. Changes in demography and lifestyle impose new challenges, and advances in technology and research have made more diagnoses and conditions treatable. Simultaneously the population continue to demand even higher quality and faster treatment from the public health care service.

This study is a contribution to the understanding of knowledge transfer in Norwegian public hospitals. The problem definition answered by the study is how process-related knowledge is transferred successfully or unsuccessfully between surgical departments in Norwegian public hospitals.

To answer the problem definition, a qualitative study was performed. 45 health care professionals with different backgrounds and educations from several Norwegian public hospitals were interviewed. These had both managerial and non-managerial responsibilities at various hierarchical levels in the organisations.

This study has two main contributions to theory. The first contribution of the study is the deduction of the *Knowledge transfer model*. The second contribution is the understanding of how the specific properties of the model influence the eventual outcome of the knowledge transfer process.

SAMMENDRAG

Det norske helsevesenet er i rask forandring. Endringer i demografi og livsstil har ført til nye utfordringer for helsetjenestene, og fremskritt innen teknologi og forskning gjør at stadig nye diagnoser og tilstander kan behandles. Samtidig fortsetter befolkningen å kreve stadig høyere kvalitet og raskere behandling i det offentlige helsevesenet.

Denne studien er et bidrag til forståelsen av kunnskapsoverføring i norske offentlige sykehus. Problemområdet belyst av studien er hvordan prosessrelatert kunnskap overføres vellykket eller mislykket mellom kirurgiske avdelinger på norske offentlige sykehus.

For å svare på problemdefinisjonen ble en kvalitativ studie utført. 45 helsarbeidere med ulik bakgrunn og utdannelse fra flere norske offentlige sykehus ble intervjuet. De befant seg på ulike hierarkiske nivåer i organisasjonene, og hadde i varierende grad ledelsesoppgaver.

Denne studien har to hovedbidrag til akademisk teori på området. Det første bidraget med studien er utledningen av en modell for kunnskapsoverføring ("*The knowledge transfer model*"). Det andre bidraget er forståelsen av hvordan spesifikke egenskaper ved modellen påvirker den endelige utfallet av kunnskapsoverføringsprosessen.

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Part I

INTRODUCTION

INTRODUCTION

The health care industry is in rapid transformation. New technologies and research make new procedures, techniques, and treatments available. Simultaneously, demographic changes pose huge challenges for the Norwegian health care system. An ageing population result in an increased demand for geriatric care. Additionally, changes in human behaviour and lifestyle have resulted in a dramatic increase of lifestyle-related diseases such as diabetes and obesity (Zimmet et al., 2001).

The transformation is happening at an increasing rate, and for many health care professionals just staying up to date on the latest best practice can be a workload on its own. During the last 20 years the number of patients receiving treatment in the Norwegian specialised health care service has increased dramatically (Senter for helsetjenesteutvikling, St. Olavs hospital, 2013). Additionally physical examinations, medical treatments, and later the follow-up processes are performed differently today than they were 20 years ago. More tasks are carried out within a shorter time, coinciding with an increase in treatment complexity. This development demands tight cooperation between different medical specialities and between professions. Similarly, cooperation between clinics and departments are needed, as practitioners are becoming even more specialised and complex patient cases require many specialities to work together (Senter for helsetjenesteutvikling, St. Olavs hospital, 2013). Rapid changes in working methods and division of labour also mean that professionals must be able to evaluate the appropriateness of various solutions, as well as adapting for organisational changes.

1.1 PRACTICAL APPLICATION

Hospitals can be characterised as "knowledge-intensive" organisations (Morten T. Hansen, 1999). This means that most of the value in the organisation is created by utilising the skills, knowledge and experience of the employees (Willem and Buelens, 2007). In a hospital setting this is manifested as the value creation takes place in the interaction by health care professionals

and patients (Eriksen-Deindoff et al., 2013). Knowledge-intensive organisations, such as hospitals, are dependent on continuously learning from mistakes and to make improvements, and then to transfer this newly acquired knowledge between units in the organisation Kim et al. (2012).

> *I believe that if we are to improve the quality of our patient care, it is not with great breakthroughs within medical research where we will be able to find the biggest improvements. I sincerely believe that it is by treating the right patient, at the right place, and at the right time in a resource efficient way, which may make room for treating more patients as well. I believe this is where we can benefit the most, but it is not very medically related.*
>
> *Chief surgeon 10, Department leader*

In 2015 there are granted 132 billion NOK to the Norwegian specialised health care service (Finansdepartementet, 2015). This implies that even a marginal increase in efficiency could release a considerable amount of financial strength, which could have been used to invest in increased quality of treatment, shorter hospital lines, new equipment, and more appropriate logistics. A recent Norwegian study on geriatric care for patients with hip fractures compared the effectiveness and cost-effectiveness of giving such patients comprehensive geriatric care in a dedicated geriatric ward, in contrast to the usual orthopaedic care. Prestmo et al. (2015) found that the treatment of older patients with hip fractures should be treated as orthogeriatric care. That being a interaction between geriatric and orthopaedic care. The idea is to be able to map, examine, and treat the patient, while at the same time planning individual rehabilitation and training. This was done in tight cooperation between geriatricians and orthopaedists, and this was the key to the great results (Fremstad, 2015).

Prestmo et al. (2015)'s results evidently impose best-practises for medical treatment, but they also have implications for how the processes around these operations should be managed. St. Olav University hospital in Trondheim is now changing its fast track clinical pathway for geriatric hip fracture patients in order to allow for this tighter relationship between specialities. There are about 9000 such surgeries in Norway every year, and this process improvement might lead to a 130 million NOK yearly cost saving (Prestmo et al., 2015).

Benefiting from the best of all processes in the organisation should be on top of every hospital manager's mind, but there is found to be a lack of focus on attention on this area, and the recognition of knowledge as one of the main sources of value creation affirms the need for processes that facilitate the creation, sharing, and leveraging of individual and collective knowledge (Ipe, 2003).

1.2 THEORETICAL APPLICATION

Extensive research has been performed on the area of successful deployment of knowledge sharing practises through knowledge management and organisational performance studies. Further, the area of hospitals as public knowledge institutions and the transfer of medical knowledge is a much discussed academic field. Hence, there exists a solid empirical research base on the subject (Watson and Hewett, 2006). Additionally, there has been a growing research interest on the subject of knowledge transfer between organisational units due to its potential to increase the innovative capacity of an organisation (Deng, 2007). Existing research include the identification and investigation of properties mediating successful knowledge transfer within knowledge intensive organisations (see Szulanski, 1996; Kim et al., 2012; Watson and Hewett, 2006; Deng, 2007). However, little research has considered the properties of effective knowledge transfer of process-related knowledge in hospitals. As such, the purpose of the study is to fill this research gap by investigating the properties that determines successful knowledge transfer of process-related knowledge between surgical departments in Norwegian public hospitals, and to illuminate the academic discussion on the field.

The restriction to surgical departments was imposed as it is a natural way to scope the study. Surgical departments are, despite their differences in the medical field, quite similar when it comes to processes and the flow of patients. Based on the authors' non-medical background it was seen as beneficial to deal with only one field of medicine, i.e. surgery, in order to be able to more comprehensibly be able to understand the working methods of surgeons and issues facing them.

A successful knowledge transfer between two departments implies that the knowledge is transmitted between the two units. In addition, the knowledge has to be adopted in the receiving department and be integrated in their daily operations and

routines (Szulanski, 1996). Correspondingly an unsuccessful knowledge transfer is either the failure or non-existence of such transmission and adoptions.

1.3   RESEARCH QUESTION

The authors seek to enhance the understanding of why knowledge, innovations, and best-practises related to processes are transferred successfully or unsuccessfully between surgical departments in Norwegian public hospitals. The research will be conducted by performing a qualitative case study where practitioners from different levels and professions at several Norwegian public hospitals will be interviewed. The research focus on process-related knowledge, as this is seen as an uncovered area in literature, and is therefore differentiated from most other works on the field. This leads to the following research question:

Research Questions	
RQ	How is process-related knowledge transferred successfully or unsuccessfully between surgical departments in Norwegian public hospitals?

Table 1: Research Question

The answer to the research question will be thoroughly analysed and presented in terms of empirical findings. These will be succeeded by a discussion on how the findings contribute to the academic field concerned with knowledge transfer in hospital organisations.

There are clear boundaries in the scope of the research, and it should be very clear to the reader that this study is concerned with knowledge transfer between surgical departments within hospital organisations. Therefore knowledge transfer outside the boundaries of the single hospital organisation is not investigated.

1.4   CONTENT PREVIEW

This introduction chapter presents the research question and place it in a proper context. Chapter 2 presents the conceptual

background for the thesis. In Chapter 3 the methodology used in this study will be described and rationalised, as well as the various choices made during the research process. Chapter 4 presents the research findings in terms of a quantitative listing of the most discussed theoretical elements of knowledge transfer, as well as a thorough presentation of the concrete findings in relation to the research question. In Chapter 5 the research's contribution to the academic field and various stakeholders will be elaborated. Further the findings from Chapter 4 will be discussed in relation to the research question and relevant theory. Implications, limitations, and suggestions for further research will also be proposed in Chapter 5. The conclusion of the study is presented in Chapter 6. Lastly, relevant supporting material is found as attachments in the Appendix.

Part II

BACKGROUND AND RESEARCH
METHOD

CONCEPTUAL BACKGROUND

To provide further insight into the study of knowledge transfer in Norwegian public hospitals, it is necessary to clarify concepts and definitions related to the topic. The conceptual background for the research will be presented in the following Chapter.

2.1 KNOWLEDGE DEFINED

In the literature there are several explanations and definitions of what knowledge actually is. Ipe (2003) defines knowledge as "a fluent mix of framed experience, values, contextual information, and expert insights that provides a framework for evaluating and incorporating new experiences and information. It originates in and is applied in the minds of knowers". Willem and Buelens (2007), on the other hand, limit the definition of knowledge to "the practical and experience-based knowledge or know-how, that is, practical understanding that enables a firm to perform various operations". This definition of knowledge is supported by Argote et al. (2000) who within the area of organisational learning defines knowledge as the capacity of an organisation to act competently. Evidently, knowledge appears to be a rather broad concept, and according to Willem and Buelens (2007), there seem to be no clear consensus on the term in the literature.

2.1.1 *Different types of knowledge*

In order to define knowledge more specifically, Ditillo (2012) provides a more fragmented definition of knowledge and proposes that there exists four types of knowledge, that is, process-related knowledge, opportunity-related knowledge, outcome-related knowledge and technology-related knowledge. However, there exists a dominant classification of knowledge which separates it into two parts, namely *tacit* and *explicit* (Ipe, 2003). According to Ipe (2003) the critical differences between these two types of knowledge is found in three areas; codifiability and mechanisms for transfer, methods for acquisition and accumulation, and the potential to be collected and distributed.

Explicit knowledge is formal and systematic (Nonaka, 1991). It is information that can be formalised or codified, and is easily transferred without a loss of integrity (Harvey, 2012). Examples of explicit knowledge are user manuals and business procedures. Tacit knowledge, on the other hand, is highly personal, contextual knowledge incorporated in the memory of actors (Harvey, 2012). It is hard to formalise, and therefore difficult to communicate to others. It is deeply rooted in action an in an individual's commitment to a specific context, such as a craft or a profession (Nonaka, 1991). Transfer of tacit knowledge demands physical interaction, such as dialogue or observation, since formalisation is demanding and sometimes impossible. Departmentalisation is a natural and unavoidable barrier to the sharing of such knowledge, preventing one department from benefiting from the experience of another (Willem and Buelens, 2007). The definition of knowledge as either tacit and explicit is chosen for this study.

2.2   KNOWLEDGE TRANSFER

The definition of knowledge transfer in organisations varies through the literature, both in degree of complexity and scope. Bosua and Scheepers (2007) define knowledge transfer as "the movement of knowledge between its origin and destination within a specified context". Argote et al. (2000), on the other hand, extend the definition of knowledge transfer to "the process through which one unit (e.g. individual, group, department, or division) is affected by the experience of another unit through the transmission of discrete routines or capabilities".

Willem and Buelens (2007) support the latter perspective on knowledge transfer, and emphasise that a knowledge transfer process involves more than simply acquiring or transmitting knowledge from one unit to another, but also incorporates the exchanging and processing of knowledge in a way that the knowledge is integrated in the receiving unit. This view is reinforced by Szulanski (1996), who defines transfer of knowledge as dyadic exchanges of organisational knowledge between a source and a recipient unit. He emphasises that the success of a transfer implies that the recipient has managed to absorb and retain the knowledge transferred. In this study, the latter definition will be acknowledged. Hence, a successful knowledge transfer implies that not only is the knowledge transmitted

from one unit to another. The knowledge also has to be adopted in the receiving unit and integrated successfully in their daily operations and routines. The word *transfer* is used rather than *diffusion* to emphasise that the movement of knowledge within the organisations is a distinct experience, not a gradual process of dissemination, and depends of the characteristics of everyone involved (Szulanski, 1996).

2.3 KNOWLEDGE SHARING

Whereas the term *knowledge transfer* describes the movement, adoption, and retention of knowledge between organisational entities, the term *knowledge sharing* describes the act of making knowledge available to others within the organisation (Ipe, 2003). Knowledge sharing is carried out by individuals, and is the process by which knowledge held by one individual is converted into a form that can be absorbed, understood, and used by other individuals (Ipe, 2003). The use of the term *sharing* implies that the sender participates voluntarily and consciously, even though there is no compulsion to do so. Furthermore, the sender does not claim ownership of the knowledge, instead it results in joint ownership between the sender and recipient.

Without knowledge sharing it would be impossible for organisations to leverage on past experience and expertise, thus knowledge dissemination and transfer is essential if the organisation is to exploit knowledge on the organisational level (Howell and Annansingh, 2013).

2.4 HOSPITALS AS KNOWLEDGE-INTENSIVE ORGANISATIONS

A knowledge-intensive organisation is an organisation whose main activity is to develop and provide knowledge (Willem and Buelens, 2007). According to Willem and Buelens (2007) all organisations can to a certain degree be classified as knowledge-intensive. However, some organisations have knowledge as their core product, and are either driven by providing knowledge to the public or employs experts who develop and provide knowledge, and can therefore be characterised as knowledge-intensive. Hospitals can be defined as knowledge-intensive organisations as they have knowledge as their core asset, and their daily operations are built on the specific knowledge of their employees (Morten T. Hansen, 1999; Alvesson, 2004). Deng (2007) supports this by adding to his definition that knowledge-

intensive organisations as those where the major workforce consists of well-educated, qualified employees, and where the work is mainly of an intellectual nature. Ferlie et al. (2005) agree and define such organisations as private or public companies that contain multiple groups of professionals, specialists, and experts. They argue that these groups of professionals may operate in a distinct community of practice within the organisation which are often uniprofessional communities with strong social and cognitive boundaries, and states that hospitals are such organisations. Consequently, the definition of hospitals as knowledge-intensive organisations is acknowledged in this study.

2.5 PROPERTIES OF KNOWLEDGE TRANSFER IN KNOWLEDGE-INTENSIVE ORGANISATIONS

The properties of knowledge transfer processes in knowledge-intensive organisations are determinants identified from literature to influence the knowledge transfer process in knowledge-intensive organisations. The properties are presented in Appendix B with a definition, their sources and their relative influence on knowledge transfer processes. The definition of the properties will also be presented, if relevant, along with the findings in Chapter 4, in order to remind the reader of these definitions.

The term "properties" was used as a unifying term for factors influencing knowledge transfer, as it is uniformly appropriate and easily comprehensible. In the empirical literature a differing terminology has been used to identify the different concepts and constructs that affect knowledge transfer. In the empirical articles various terms, such as "characteristics" (Szulanski, 1996; Willem and Buelens, 2007), "factors" (Watson and Hewett, 2006; Tsai and Cheng, 2012), and "features" (Rosendaal, 2009) were often used to refer to the various constructs.

2.6 CONCEPTUAL FRAMEWORK FOR KNOWLEDGE TRANSFER PROCESSES

Conceptual frameworks are often utilised in order to describe and explain the knowledge transfer processes in organisations. See for instance Bosua and Scheepers (2007); Carmeli et al. (2011); Glomseth et al. (2007); Han et al. (2010); Ditillo (2012); Kaše et al. (2009); Kim et al. (2012); Szulanski (1996).

Szulanski (1996) identifies four groups of factors influencing the difficulty of knowledge transfer in knowledge-intensive organisations. These factors cover aspects of the context in which the knowledge is to be transferred, governing aspects of the individuals sending and receiving the knowledge, as well as characteristics of the knowledge itself. The factors are presented in Table 2. In Szulanski (1996)'s framework it is stated that the characteristics of the four factors all affect the ease and success of the knowledge transfer. All the factors are said to be present in transfer activities, however there is no general solution to how the properties should be distributed in order to result in successful knowledge transfer. According to Szulanski (1996) this is dependent on the particular situation in question.

Factor	Governing properties
Characteristics of the knowledge transferred	Casual ambiguity
	Unprovenness
Characteristics of the source of knowledge	Lack of motivation
	Not perceived as reliable
Characteristics of the recipient of knowledge	Lack of motivation
	Absorptive capacity
	Lack of retentive capacity
Characteristics of the context	Barren organisational context
	Arduous relationships

Table 2: Framework proposed by Szulanski

Another conceptual framework for knowledge sharing is presented by Ipe (2003). The framework examines knowledge sharing at the most basic level; between individuals in organisations, and identifies factors that most significantly influence knowledge sharing at the organisational level, as presented in Figure 1.

Finally, Berta and Baker (2004) argues that factors that affect the ease and efficacy of knowledge transfer and organisational learning have been found to arise at a minimum of three levels: individual, organisational/structural, and environmental/contextual. They further found four main influencing factors, as presented in Table 3.
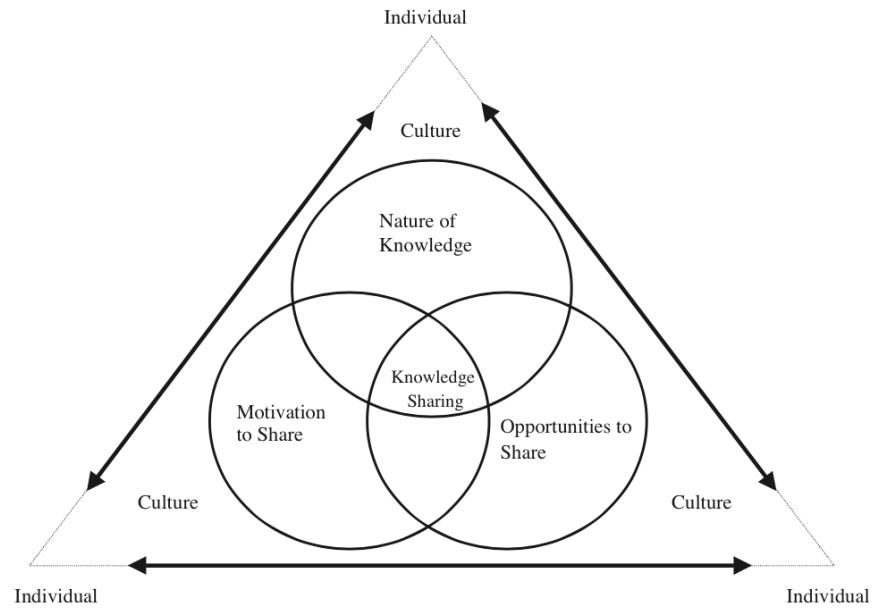
Figure 1: Framework proposed by Ipe

However, it can be argued that these frameworks were shaped by the research context, such that they would either describe the transfer process at a given level of analysis or equally often for a specific case. Thus, these frameworks can not be seen as exclusively general knowledge transfer frameworks for knowledge-intensive organisations. Szulanski (1996)'s framework can be distinguished from the rest by its general applicability, as it was created on the basis of knowledge-intensive organisations in general and covers several organisational levels and aspects.

Nevertheless, Szulanski (1996)'s framework does not include the relational properties emphasised by other researchers on the field, such as McLaughlin (2010); Yu et al. (2013); Park and Lee (2014); Rosendaal (2009); Verburg and Andriessen (2011); Usoro and Majewski (2011). Thus, there existed a need for a conceptual model which could be applicable to knowledge-intensive organisations in general, which captures the relational properties prominent in the literature. As a consequence, a conceptual framework called the *Knowledge transfer model* (KTM) has been developed.

The proposed KTM will be used as a conceptual framework for this study, and provides the needed guidance for structuring all phases of the research. The constituent parts of the framework, the four categories *The knowledge transferred*, *The departments*, *The relations between the actors*, and *The organisational context*, are described and defined in the following. Each of the

Factor	Governing properties
Environmental characteristics and interorganisational knowledge transfer	Arms-length imitation Contact learning
Characteristics of knowledge targeted for transfer	Tacitness Observability
Learning unit characteristics and intraorganisational knowledge transfer	Absorptive capacity Standardisation
Transfer process characteristics and knowledge retention	Workers Tools Tasks

Table 3: Framework proposed by Berta & Baker

categories consist of the properties relevant to the knowledge transfer process in knowledge-intensive organisations presented in Appendix B.

2.6.1 *The Knowledge transfer model*

The KTM presented in Figure 2 is built on Szulanski (1996)'s model, and can be viewed as en extension of it as they have several similarities. In both Szulanski (1996)'s framework and the KTM, the properties are distinguished on whether they affect the knowledge itself, the participating actor(s), and the context of the organisation. In addition the two models are based on the same unit of analysis. However, in Szulanski (1996)'s model there is made a distinction between the sender and recipient of knowledge, as opposed to the KTM where these roles are combined. In addition, the properties of the relations between the actors are included in the KTM, as opposed to Szulanski (1996)'s framework.

The term "categories" was used as it was the most common term for groups of elements influencing knowledge transfer throughout the literature. The categories presented in Figure 2 have been identified as the most relevant and complementary.

The knowledge transfer process			
The knowledge transferred	The department	The relations between the actors	The context
Properties of the knowledge transferred	Properties of the department	Properties of the relations between the actors	Properties of the context
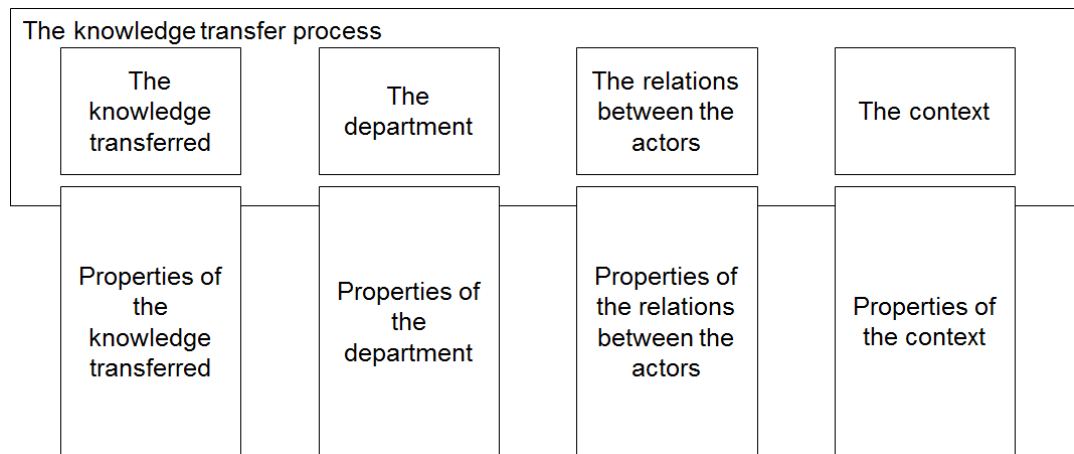
Figure 2: The Knowledge transfer model

In a majority of the articles the range of categories, if any, often corresponded, even though the categories were concealed by different names. As a consequence, it was possible to deduce four categories representing the most common tendencies in the literature by building on Szulanski (1996)'s framework and by matching the properties sectioned in each of the articles.

Furthermore, the model is constructed in accordance with a layered model design, where the layer in the back represents the knowledge transfer process, and the four layers in front represent each of the categories identified to influence the knowledge transfer process. The boxes beneath each category give an overview of the properties in the respective category. A layered architecture is advantageous as it allows the authors to discuss a well-defined, specific part of a more complex system (Kurose and Ross, 2010). Additionally, the layered design allows the reader to understand the different composites of the model in a horizontal manner, were each layer represents some kind of functionality, affecting the layer below (Kurose and Ross, 2010). Hence, the model reflects that each of the category-layers affect the entire knowledge transfer process, depending on which properties that exists within each category. The four categories will be presented in the following.

The knowledge transferred
Michailova and Gupta (2005); Park and Lee (2014); Carmeli et al. (2011) and Watson and Hewett (2006) concluded that the nature of the knowledge is a significant determinant of the ease of knowledge transfer. Even though there are different presentations of the characteristics of knowledge throughout

the literature, there exists a strong tendency in the empirical and conceptual articles that the properties of knowledge in itself are determining whether knowledge transfer within an organisation is successful. Thus, one of the four categories identified is *properties of the knowledge transferred*.

The department
Different departments have to interact with each other during a knowledge transfer process (Szulanski, 1996; Kaše et al., 2009; Friesl et al., 2011). The skills and behaviours of these departments are found to influence the efficiency of knowledge transfer, and will accordingly impact how transfer processes should be organised in order to account for the department's preferences and comprehensions. In this regard several authors identify properties of the departments in knowledge transfer processes that affect the overall success of the knowledge transfer, see Carmeli et al. (2011); Szulanski (1996); Mariano (2013); Howell and Annansingh (2013); Willem and Buelens (2007); Tsai and Cheng (2010, 2012); Friesl et al. (2011); Michailova and Gupta (2005); Harvey (2012); Watson and Hewett (2006); Yu et al. (2013); Park and Lee (2014); Usoro and Majewski (2011). Hence, *properties of the department*, was identified as the second category.

The relations between the actors
Cooperating for knowledge-intensive work is recognised as a social process in which identification and organisational climate play an important role (Rosendaal, 2009). Ditillo (2012) connotes relations as linkages between individuals of various degrees of tie strength and path length that are established to achieve knowledge transfer efficient and effective. These social ties, or relations, are influenced by certain properties (Ditillo, 2012). The subsequent group of properties identified through the review characterises the relation between the units involved in the knowledge transfer, and in a majority of the literature they are presented as highly crucial for achieving effective knowledge transfer (Ditillo, 2012; Park and Lee, 2014; Yu et al., 2013; Szulanski, 1996; McLaughlin, 2010; Rosendaal, 2009; Verburg and Andriessen, 2011). Hence, the third of the categories is *properties of the relations between individuals or units in the transfer process*.

The organisational context

The relevance of properties of the organisational context has been emphasised by many authors (Szulanski, 1996; Kim et al., 2012; Usoro and Majewski, 2011; Rosendaal, 2009). Within the category aspects affecting the organisation as a whole and its members are covered. Examples of such are the organisational culture, leadership styles within the organisation, organisational identification and the maturity of formal and informal networks within the organisation. In addition many other properties, especially at the individual level, are found to be affected by the properties of the organisational context. Hence, the fourth and last category is *properties of the organisational context*.

2.7   THE NORWEGIAN HEALTH CARE SYSTEM

In Norway there is a public health system managed by the government and financed by the taxpayers. There also exist private clinics and hospitals outside of the public health system, which function as a supplement to the public health care system. However, these are outside the scope of this study, and will therefore not be elaborated further. The public health system is divided in primary health care services and specialised health care services, whereof the latter is the subject for this study. The responsibility to provide health care services has been split between the municipalities and the state. Municipalities provide primary health care services, whereas the state provides specialised health care services.

The primary health care services provide Norwegian residents with necessary health care where they live or stay, and include services such as the general practitioner scheme[1], accident and emergency units[2], public health centres and school health services (Regjeringen.no, 2015a).

The specialised health care services are governed by the state through the Ministry of Health and Care Services. The specialised health care services comprise hospitals, polyclinics, medical specialists, ambulance services and corresponding support services. It is organised as four Regional Health Authorities (RHAs), and these are in turn divided into Hospital Trusts (HTs). Hospital Trusts consist of public hospitals, psychiatric institutions, pharmacies, ambulance services, and other institutions such as rehabilitation and laboratories (Regjeringen.no,

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1 Norwegian translation: Fastlegeordningen
2 Norwegian translation: Legevakt
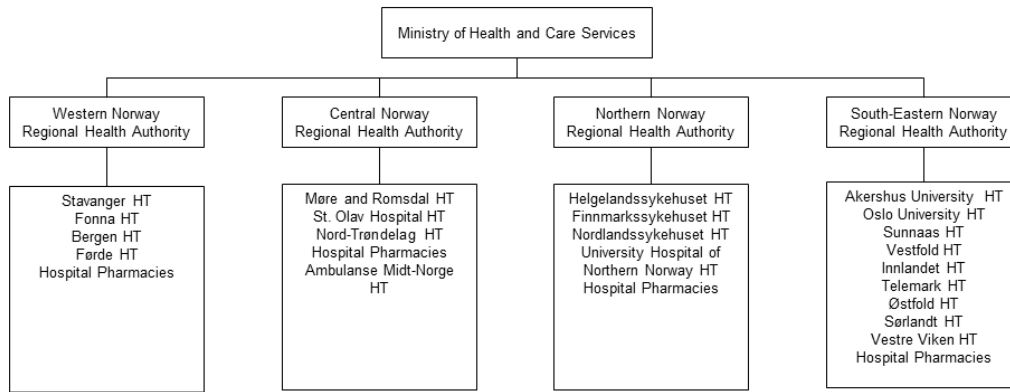
Figure 3: Organisation of the Norwegian Specialised Health Care Services

2015a). The organisation of the Norwegian specialised health care services is displayed in Figure 3.

In addition to the Ministry of Health and Care Services, which is lead by a member of the government and owns the four RHAs, the Norwegian Directorate of Health is a subordinate agency of the Ministry of Health and Care Services. The Directorate of Health's mission is to strengthen the public health by acting as an adviser on professional medical issues, implementing political resolutions, and administer law and regulations within the health care sector (Helsedirektoratet, 2015).

The Norwegian health care system is renowned for providing high quality services, and in essence treatment will be provided for everyone in need (World Health Organization, 2014). There are many hospitals of good quality in Norway. According to Eriksen-Deindoff et al. (2013) the characteristics of these are that they provide high quality patient care, good patient safety, a well-functioning workflow, satisfied employees and patients, and not the least have financial control.

2.8 NORWEGIAN PUBLIC HOSPITALS

The individual HTs are governed as publicly owned corporations with their own executive boards approved by the Ministry of Health and Care Services. Citizens have since the introduction of the Patients' Right Act that was approved by Stortinget in 1999 had the opportunity to choose where they are to receive treatment. However, it should be noted that the right does not apply for acute treatment and does not allow the patient to

choose for more specialised treatment than it was originally referred for (Fritt Sykehusvalg, 2015), and that it is only valid for elective care.

2.8.1   *Local and university hospitals*

There are both local and university hospitals among the public hospitals in Norway. There is one university hospital in each RHA, except for the South-Eastern RHA, where there are two. The university hospitals are large hospital organisations located in or around the biggest city in each region, and differ from local hospitals in that they are connected to a medical faculty and university that engage in research and clinical and theoretical education of students and specialist professionals. For many services the local hospitals are preferred as they are geographically closer for those living in more rural areas, but more complex cases are normally executed by the university hospitals. In the later years there has been a trend that some hospital services have been centralised, which has raised some concerns about the future of the local hospitals. This should be seen in coherence with the report "National Health and Hospital Plan" that the government will present for the National Committee during the fall of 2015. This will be the government's main tool for planning the future for the Norwegian specialised health care services (Regjeringen.no, 2015b).

2.8.2   *Organisation of surgical departments*

The terminology used to describe the organisational charts tend to differ from hospital to hospital, often on whether the exact hospital use an organisational or medical terminology. However, the usual Norwegian public hospital is organised in division or clinics at the highest level, and then these are divided in several sections or departments. In this way hospitals are organised in functional departments based on that department's medical specialisation. Additional support functions such as anaesthesia and cleaning services are at most hospitals functions organised within the department, but this traditional department structure is clearly on withdrawal towards a larger block structure or mixed variants (Kjekshus, 2004). Throughout this study the terminology of clinics and departments will be used, so that a hospital is said to consist of several clinics, and those further consist of one or more departments.

Surgery is divided in elective surgery and emergency surgery. Elective surgery is predictable as it does not involve a medical emergency and can thus be planned in advance, whereas emergency surgery is impossible to plan as it is acute, and thus require emergency facilities. Even though elective surgery is planned, there are many incidents that may interrupt the planned program and pose central challenges. Such are truncations of operations, e.g. due to emergency situations, patients failing to show, slack, and more complex cases than expected, as well as bottleneck issues. Hospitals use several means to deal with these challenges, and the trend is towards a clearer distinction between elective and emergency departments, where some resources are specifically reserved for emergency situations at all times (Kjekshus, 2004).

2.8.3   *Hospital management*

Top management at Norwegian hospitals consist of an executive officer with a board of directors. There are relatively large differences in the number of managers reporting directly to the director, where a few small hospitals have just a couple, but most have more than ten(Kjekshus, 2004). These boards usually consist of clinic leaders and staff personnel, such as ICT executives and professional directors.

Clinics are managed in the same manner. That is, by a clinic leader with a board of department leaders and support personnel. At the departmental level there has traditionally been a history of split management. This implies that leadership is divided between a manager for doctors and a manager for nurses. Norwegian public hospitals were by January 1st 2002 ordered to introduce a uniform leadership, where there is only one manager both for nurses and doctors (Kjekshus, 2004). Anyhow, there are still several departments with split management present, even in 2015.

Hospital managers often have a background as experienced doctors or nurses. There has been a strong tradition for competence-based leadership in Norwegian health care management, and there has been an attitude in the health care sector that managers must be experienced medical professionals. According to Eriksen-Deindoff et al. (2013) this has led to a lack of relational and transformational leadership at many Norwegian hospitals.

Hospitals are managed by the same principles as other organisations, but there are two sector specific attributes who at times

are found to restrain hospital managers (Eriksen-Deindoff et al., 2013) . The first is the *strong belonging to professions*. Doctors and nurses have traditionally had a very strong internal professional identity. This professional identity has from time to time led to power games between the professions, and a higher loyalty to the professional guild rather than the organisation as a whole (Eriksen-Deindoff et al., 2013). Secondly, *local and central politicians, as well as media, are significant and sometimes interfering elements concerning hospital's development and operation.* From time to time even on a very detailed level. Consequently hospital managers must accept that they manoeuvre in a delicate area where the agenda can be suddenly changed due to external events.

2.8.4 *Funding*

In 2015 the operating expenses for the Norwegian specialised health care service are expected to be 132 billion NOK, accounting for about 11% of the government's total expenses in the budget year (Finansdepartementet, 2015; Helsedirektoratet, 2014). This figure does not include socioeconomic costs associated with hospital stays such as decreased productivity, less tax income and so forth. Nevertheless it is evident that there are substantial costs related to operating the specialised health care service.

Funding of public hospitals in Norway is done partly by fixed allocations and activity based allocations. The Ministry of Health and Care services directly funds the RHAs, which in turn fund the individual HTs. Somatic care is financed 60% by fixed allocations and 40% by activity based allocations (Regjeringen.no, 2015c). The magnitude of the fixed allocations are decided by the demographic composition of the region, where factors such as population size and age distribution are taken into account. The fixed allocations are independent of the production of health services in the region. Activity based funding is based on an own price per unit scheme where the amount of e.g. surgical operations directly affect the granted funds. Within the activity based scheme patient co-payment, polyclinic refunds, and some treatment at private specialists are included (Regjeringen.no, 2015c). These refunds cover 40% of the average costs for the ordinary expenses of a patient treatment, the remaining 60% is financed through the ordinary allocation. This leads to some treatment being more expensive than its

total allocation, whereas some being cheaper and hence more profitable.

2.8.5 *Trends*

Health care is a highly knowledge-intensive industry with an extremely strong and present research community. Consequently it is cumbersome to give an overview of all trends affecting public health care, and the intention of this section is only to provide a brief overview of trends that are especially prominent and important in relation to the success of knowledge transfer in Norwegian public hospitals. Hence, the aim is to provide the reader with a stronger foundation in order to be able to follow the comprehensible results and discussion later in the study.

Clinical pathways

There are written procedures and best-practises for almost every treatment-related case, and in Norway there is a political goal to standardise treatment trough clinical pathways (Kaasa, 2013). Clinical pathways are clinical management tools used by health care workers to define the best process in their organisation, using the best procedures and timing, to treat patients with specific diagnoses or conditions according to evidence-based medicine (Panella et al., 2003). As a result from this political focus there is a clear trend in within the Norwegian specialised health care service that there are created clinical pathways for more and more diagnoses. The part of the clinical pathways that is related to the processes around the actual surgery is commonly identified as *fast track*. Fast track surgery combines various techniques used in the care of patients undergoing elective operations, and greatly shorten the time required for full recovery after surgery (Wilmore and Kehlet, 2001). It is commonly used especially for orthopaedic surgeries in Norway. However, fast track is constantly transferred as part of the clinical pathways into new professional areas.

Evidence-based medicine

The focus on clinical pathways must be interpreted with a foundation on the larger trend of evidence-based medicine. According to Sackett et al. (1996) evidence-based medicine is the conscientious, explicit, and judicious use of current best practice in making decisions about the care of individual patients. The practice of evidence based medicine means integrating the best

of individual clinical expertise, that proficiency and judgement clinicians gain from experience and clinical practise, with the best of available external clinical evidence from systematic research (Sackett et al., 1996).

Leadership

Further there is an increased focus on leadership in hospital organisations, and acknowledgement that leadership is a profession level with medicine is starting to spread. So is the understanding that leadership is a full-time job. According to Eriksen-Deindoff et al. (2013) more and more hospital managers are learning the difference between leadership and management, and able to delegate more managerial task to focus more on actually being leaders.

METHODOLOGY

The following chapter presents the methodology of this study and the main steps of the research process. The process is illustrated in Figure 4. The research strategy, data collection, data analysis, and assessment of research quality in terms of reliability and validity are described in the following.

Establish research strategy	Define RQ	Establish research design	Choose case to study	Establish theoretical foundation
Collect data	Collect documentation and records	Create interview guide	Conduct interviews	Transcribe interviews
Analyse case evidence	Establish analysis strategy	Code data	Interpret case evidence	Link data to theory
Discuss findings and conclude	Discuss findings in relation to RQ	Find implications	Define limitations and further reseach	Conclude on research

Figure 4: The research process

3.1 RESEARCH STRATEGY

The chosen research strategy for this study was inductive and qualitative in order to understand how knowledge is transferred successfully or unsuccessfully in Norwegian public hospitals. The epistemological stance of this social research is *critical realism* as the authors assume that there exist a reality that is imperfectly and difficult to measure due to human cognitive limitations and the problematic nature of social phenomena. The ontological position of this study is *constructivism*, because the study views social reality as a constantly shifting emergent property of individuals creation (Bryman, 2011).

3.1.1 *Defining the research questions*

The health care sector's performance in recent years in terms of innovation and developments, and the seeming lack of ability to share such knowledge between the different surgical de-

partments (Riksrevisjonen, 2013), triggered the attention of the authors. The initial interest of the authors, with a background in management sciences, was if new process innovations and routines such as fast-track and standardised clinical pathways were transferred between surgical departments, and if they were, why such transfer processes were successful. This led to the research question of this study, as presented in Table 1. The research question seeks to investigate a highly significant issue in the Norwegian health care industry where new innovations and routines are developed continuously and simultaneously in peer departments, representing a potential high value for the Norwegian health care, both in terms of quality of patient care and economical gains, if they can be shared.

3.1.2 *Research process and design*

Surgical departments of Norwegian public hospitals are the main unit of analysis in this study, and the focal area of the study is the interdepartmental transfer and absorption of knowledge. The nature of the study is explanatory, as it seeks to explain how knowledge is transferred successfully between hospital departments.

This study employs a multiple case design, investigating several cases of knowledge transfer processes in Norwegian hospitals. The rationale behind this decision is that knowledge transfer processes within hospitals are assumed not to be rare, unusual or critical phenomenons, which strengthens the opportunity to conduct a multiple-case design, and thereby increasing the possibility of direct replication. As analytical conclusions independently arising from two cases will be more powerful than those arising from one, the evidence from multiple cases is often considered as more compelling, and the overall study is regarded as being more robust, than from a single-case design (Yin, 2009).

3.1.3 *Theoretical foundation*

The conceptual background was based on literature concerning knowledge transfer in knowledge-intensive organisations and in hospitals. In order to identify literature and articles relevant to the conceptual background, it was decided to perform a keyword search, and the academic database Scopus was selected. There were two main reasons for this decision.

First, the key word search method includes the possibility to filter a broad range of literature efficiently through the use of advanced search methods. The advanced methods gives the opportunity to structure a search by the use of synonyms and AND-/OR- functions which makes it possible to cover multiple academic disciplines and different terminologies through one search. This was an important attribute, as even though the scope of the search was limited, there existed a significant diversity in the terms and concepts used to describe the same phenomenons within the field. Second, Scopus was chosen because of its size and reach in a wide area of scientific subjects, its neutrality and its recommendations from scientific staff at NTNU. A reliable database was important in order to capture the most significant literature on the specified field, thus ensuring the robustness of the theoretical foundation. However, there are certain risks with this method. The automatic search process may have eliminated relevant articles along each iteration of the keyword search. To minimise this risk, another search method was used as a complement, namely a reference search. In addition, informants regarded as experts on the subject has facilitated the search and provided the authors with relevant articles.

3.2 DATA COLLECTION

In order to establish a foundation for understanding the data of this study, the sample and the methods by which the data was collected is presented in the following.

3.2.1 *Sample*

The research sites were chosen to be five public Norwegian hospitals, where two were mid-sized local hospitals and three were university hospitals. The authors decided to restrict the scope of the study to public hospitals. The main reason for this decision was that public hospitals constitutes the main part of the Norwegian health care sector, comprising a majority of the surgeries conducted in Norway, which makes the cases within the public sector highly interesting units of analysis in the eyes of the authors. Secondly, the private sector was excluded, and public hospitals were investigated exclusively, in order to get an as consistent study as possible. The private

sector was seen as irrelevant, as it can be assumed to be driven by other, non-comparable mechanisms.

Consequently, the pool initially consisted of all Norwegian, public hospitals. The selection of both local and university hospitals was made in order to avoid local biases and to capture data from hospitals representing the two main types of somatic hospitals in Norway. The pool then had to be narrowed further down in order to obtain a manageable number of cases. By using an established contact network provided by key informants and academic supervisors, five hospitals was selected, covering both university- and mid-sized local hospitals.

The restriction of surgical departments was imposed as it is a natural way to scope the study. Surgical departments are, despite their differences in the medical field, quite similar when it comes to processes and the flow of patients. Based on the authors' non-medical background it was seen as beneficial to deal with only one field of medicine, i.e. surgery, in order to be able to more comprehensibly be able to understand the working methods of surgeons and issues facing them.

The interviewees were chosen based on predefined selection criteria, and were found through personal connections or the use of snowballing, which can also be regarded as a convenience sample. The selection criteria are described in the following.

3.2.2 *Interviews*

Interviews have been the main source of evidence for this study. According to Yin (2009), interviews are considered to be one of the most important sources of case study evidence, as it allows the interviewer to obtain targeted and insightful information first-hand. Furthermore, in depth, perceived casual explanations and knowledge is important to ensure the quality of a qualitative case study (Yin, 2009). Hence, interviews were a natural choice of main data collection method. 45 interviews, with a duration between 35 and 70 minutes, were conducted, constituting approximately 40 hours of interview data.

Selection criteria
In total, 45 interviews were conducted out of 64 persons contacted. The work in a surgical department is characterised by close collaboration between actors in the different positions and professions. As a consequence, the interviewees were selected

in order to ensure a cross-positional and cross-professional perspective on knowledge transfer processes. The selection of interviewees included 21 nurses, 3 surgeons, and 21 chief surgeons, whereas 17 where employed in department leader positions, 2 were employed in clinic leader positions, and 1 holds a position as a professor at a Norwegian university. In addition to their position and profession, the selection of informants was based on their knowledge and experience, credentials, and their availability. The selection process included a background check of their experience and work within their profession.

The preparation phase

In the preparation phase of the data collection, the authors constructed a semi-structured interview guide. A semi-structured interview guide makes it possible to let the interview object speak freely on predefined topics, following the planned line of enquiry (Bryman, 2011).

   The interview guide, which is presented in Appendix A, has a rather broad focus. This is as the collected data will be used in a doctoral thesis as well. The questions which constitutes the foundation of this study are mainly question 5, 8, 9, 14, 15, 17, 18, 20 21, 29, 30 and 31. However, the responses to the other questions provided valuable additional information regarding the research question. Additionally, the coding described in Section 3.3.3, ensured that the data included and analysed was within the scope of the study.

   The process of constructing the interview guide had several iterations in order to ensure solid interviews and an unbiased outcome, consistent with the RQ. First, a semi-structured guide was constructed based on the findings from the initial literature review. Thus, the questions and topics included in the interview guide was each representing different aspects of the defined knowledge transfer model presented in Figure 2 in Chapter 2.6.1. Second, the first draft of the interview-guide was evaluated by an experienced supervisor, and adjustments were made accordingly. Then, the interview-guide was tested through a pilot interview with an intern surgeon from a surgery department in a Norwegian public hospital. In this way, the authors became familiar with the focus on the interview. Finally, after thorough feedback from the test interviewee, a last iteration of feedback from the supervisor was executed, and the the final version of the interview guide was completed.

The Interview phase

The interviews were all held in accordance with the interview guide. More specifically, the interviews were conducted as semi-structured conversations were the interviewee spoke, without being led, on the topics presented through the interview questions. During the interview, the authors tried to follow particularly two interview principles, presented by Yin (2009). The first principle was to follow the planned line of enquiry, which was reflected by the interview guide, in order to collect data relevant to the research questions. The second principle was to ask the questions in an open and unbiased manner, in order to obtain genuine and reliable answers, reducing the risk of reflexivity. This also made it possible to pick up on nuances and local differences from each of the different hospitals. The questions were asked in similar wording in each interview, in order to minimise inconsistent data.

All interviews were recorded and later transcribed to ensure an accurate rendition of the data.

3.2.3 *Documentation*

The secondary source of data for this study was documentary information. According to Yin (2009), documentation as a source of evidence is stable, unobtrusive, exact, and has a broad coverage.The documentation used in the data collection for this study includes presentation slides, administrative documents and news articles. To ensure a critical interpretation of the documentation, the authors have sought to understand the objectives of the source of the documentation, and to understand how the information may have been influenced by being meant for a different recipient than the authors themselves. A selection of news articles were evaluated to ensure an external perspective on the topic. Media appearances, work related documentation, and general background information concerning the interviewees were collected and served as material in the interview preparation phase.

3.2.4 *Archival records*

Archival records are the third source of evidence, and has been used in conjunction with other sources of information. The archival records used primarily include "public use files", which in many cases are relevant as the study investigates public hos-

pitals. The public use files investigated are files such as reports from the state's bureau of statistics, reports from the Office of the Auditor General of Norway, the government budget, and the annual report of the Norwegian Directorate of Health. The advantages of archival records are that they are precise and usually quantitative, stable and unobtrusive. However, the authors are aware of weaknesses such as reporting biases, meaning that some of the reports considered may have been meant for a different audience, and hence, may be irrelevant for this study in particular.

3.3 DATA ANALYSIS

In order to provide insight into the analysis of the data, the means by which the data was analysed and interpreted is presented in the following.

3.3.1 *Analysis strategy*

Grounded theory was used as a general strategy of the qualitative data analysis, as it is presented as being particularly suited for capturing complexity, which is highly relevant in an organisational study (Bryman, 2011). In order to answer the research questions, coding was used as the key qualitative data analysis technique. The coding technique is considered the main method in grounded theory, providing the possibility to systematise, and analyse the data through the use of concepts and categories, which eventually may lead to theory generation (Bryman, 2011).

3.3.2 *The coding technique*

In order to answer the research question, all the written material was coded using the 60 properties identified through the literature review, presented in the KTM. More specifically, each of the codes corresponded to one of the derived properties, in order to systematise and categorise the data in a logical manner, preparing the data for analysis.

The coding was supported electronically by the use of a CAQDAS (Computer Assisted Qualitative Analysis Software) named MAXQDA. There were several valuable functions of the software which made the analysis process easier. Firstly, the soft-

ware facilitated the coding and categorising of a large amount of text in a structured manner. Secondly, MAXQDA made it possible to generate analysis based on the coded material. Finally, several users could work on the same project.

Each of the properties from the KTM are defined in Appendix B. The definitions are relatively precise, and leaves little room for interpretations. However, the coding of the different segments is subject to the biased evaluations of the authors. As a consequence, to minimise the subjective influence on the coding, a weighting system was used for the coded segments. By weighting each of the coded segments, it was possible to account for their relative strength when later analysing the different segments:

Weight	Explanation
0	Segment interpreted to support the coded determinant
1	Lower degree of unsolicited support of the coded determinant
2	High degree of unsolicited support of the coded determinant

Table 4: Explanation of weighting of coded segments

3.3.3 *The coding process*

The coding process was conducted in four steps, as presented in Figure 5.

The first step in the coding process was the completion of the interviews and transcriptions.

The second step of the process was to code the transcribed interviews. The interviews were divided into two arbitrary groups, which were then coded by the two researches separately. In order to prevent the coding output from inconsistencies due to individual bias, coding guidelines were made prior to the process.

The third step of the process was to cross-check and verify the coding by switching a random selection of the transcribed interviews between the researchers. Each of the selected interviews were then recoded by the other researcher. This step made it possible to ensure a mutual criteria of coding by detecting inconsistencies, and to ensure that no segments had
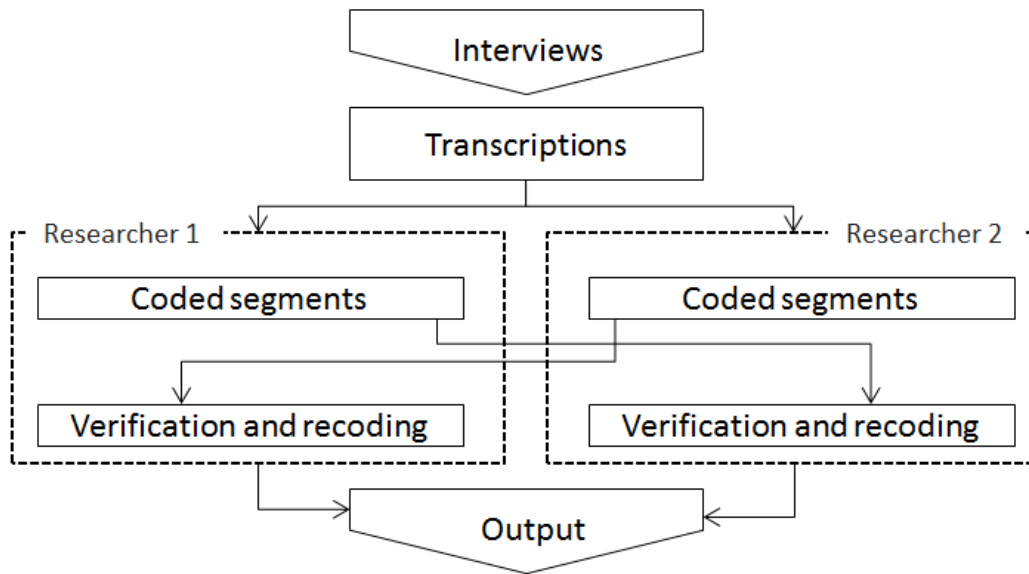
Figure 5: The four steps of the coding process

been excluded during the process. If there were any deviations in the coding, the researches back-tracked them, matched the coded segments with the guidelines, and made corrections in accordance with the them.

The fourth and final step of the process entailed the generation of output data for further analysis. The output included summaries and graphical and statistical data of the coded segments. The output which proved to be relevant was analysed further and will be presented in the findings in Chapter 4.

3.3.4 *Finalising the analysis*

The qualitative analysis software MAXQDA traces the frequency of the assigned codes. In addition, it measures the magnitude of each segment, implying to what extent the code was discussed and emphasised. Both the frequency of the code and the weighting of the segments were included in the analysis of the coding. This resulted in a quantitative summary of the qualitative data, which makes it possible to evaluate which of elements of the data where the most prominent. As a result, quantitative data could be used as a supplement to the qualitative results.

The frequency of the assigned code is dependent on the number of coded segments. The total magnitude of each code, on the other hand, is measured based on the average area of each coded segment, in addition to the frequency of the code. The

area of each of the coded segment is naturally influenced by the articulate skills of the interviewee. As a consequence, the impact of the variance of the area of the coded segments can be assumed to decrease as the number of coded segments increases, as it will eventually get evened out according to the law of large numbers. On the contrary, the frequency of the coded segments can be assumed to be subject to a smaller variance in the case of few coded segments. Hence, frequency can be assumed to be the preferred measure in the case low frequencies of coded segments when the variance of the parameters will have a greater impact on the results. As the number of coded segments were relatively high, the authors found it justifiable to use both of the parameters.

In order to ensure consistency among the codes, and in order to obtain results which were as unbiased as possible, the authors decided to assign weights to each of the different coded segments.

The weighting of the assigned codes was a third way to ensure consistencies in the coding, by measuring their relative strengths based on the solicited support of of the coded property. In this way the codes were verified by a third parameter, and the overall quality of the results were strengthened accordingly.

3.4   QUALITY OF RESEARCH

In order to ensure the overall research quality of this qualitative, inductive study, central research quality criteria have been addressed. In the following, a detailed description of how will be presented in the following in terms of the research criteria presented by Yin (2009): *reliability*, *construct validity*, *external validity*, and *internal validity*.

3.4.1   *Reliability*

The reliability has been addressed in order to minimise possible errors and biases in the study. According to Yin (2009) the reliability can be strengthened by demonstrating that the study is replicable, implying that the operations of the study - such as the data collection procedures - can be repeated with the same results. The authors have pursued a strong reliability by striving to maintain a chain of evidence, conducting every step of the research process as operational as possible by following

a case study protocol, and by documenting each of the steps thoroughly in a case study database.

The case study database was established in the initial phase of the research in order to ensure a safe and organised collection of data and resources, and hereby the reliability of the study. The case study database was stored electronically by the use of cloud-storage, accessible from all computer platforms with Internet connection. The cloud-storage kept the data collected secure and easy accessible for the researchers involved. The data and resources were organised in folders and include the interview schedules with time and place for interviews, the interview guide, and the recordings and the transcriptions of the interviews, in addition to notes made by the authors. In this way, it will be possible to retrieve information easily and review the evidence directly if needed, not being limited to the written case study report.

The case study protocol was developed in order to ensure a methodological correct collection of data. The study is primarily based on interviews, and the protocol functioned as an interview guide through the semi-structured interviews. The consequent use of the interview guide enabled a routinely conduction of the interview process; from the initial contact with the potential interviewee, to the recording and transcription of the interviews. In this way, the authors tried to minimise the subjective influence and biases, ensuring a consistent data collection process.

Semi-structured interviews are to a significant degree influenced by subjective interview skills and cognitive limitations. As a result, the possibility of receiving the same answers when repeating the interviews are minimal, even when the interviewee is the same person. Hence, the data collection may be hard to replicate, and thus, the reliability of the study may decrease. In addition, the characteristics defining the context of this study are constantly changing. This may implicate that the premise of the study after a certain period of time is no longer valid, meaning that the strength of reliability of the study may decrease with time.

3.4.2 *Validity*

Construct validity
The construct validity concerns the identification of correct operational measures for the concepts being studied (Yin, 2009). In

this study, the use of multiple sources such as interviews, documents and archival records has been one way of dealing with the potential problems of construct validity. By using multiple sources of data the authors have conducted data triangulation, meaning to collect data from multiple sources aimed at corroborating the same fact. This way construct validity is addressed because the multiple sources essentially provide multiple measures of the same phenomenon. In addition, the authors have sought to establish a chain of evidence during the data collection phase. Furthermore, in the composition phase, the authors had their draft case study report reviewed by key academic supervisors so that they could identify possible errors in the measures.

External validity

External validity concerns the problem of knowing whether the findings of a study are generalisable beyond the immediate case study (Yin, 2009). Since case studies rely on analytical generalisation, the external validity of the study of knowledge transfer processes can be strengthened if the findings of a case can be replicated. The choice of a multiple case design enables replication, which is the chosen research design of this study. As analytical conclusions independently arising from two cases will be more powerful than those arising from one, the evidence from multiple cases is often considered as more compelling, the external validity is strengthened, and the overall study is regarded as being more robust (Yin, 2009). However, there are certain limitations regarding the external validity of this study. First, the selection of hospitals consisted of both university and local hospitals, making the results hard to generalise for either of this two types. In addition, many hospitals are characterised by local differences, which may weaken the external validity.

Internal validity

According to Yin (2009), the criteria internal validity concerns the establishment of a casual relationship, whereby certain conditions are expected to lead to other conditions. It is, however, challenging to establish strict casual relationships between events based on qualitative data from interviews. In order to address this criteria, pattern matching was performed. By conducting interviews with different groups of objects, different patterns where retrieved. The conceptual background formed a predicted pattern, by which the patterns emerging from the

analysis was matched. The consistency of the patterns contributed to strengthen the internal validity of the study.

Part III

RESEARCH FINDINGS

RESULTS

This chapter presents the results from analysis of the data from the interviews and complementary documentation. First, the different types of knowledge identified will be described. Then, the quantitative results of the properties identified will be presented. In this way, a foundation for interpreting the main results is provided. Finally, the main results from the research are presented to answer the research questions, structured in accordance with the Knowledge transfer model (KTM) as shown in Figure 6.

4.1 TYPES OF KNOWLEDGE IN A HOSPITAL SETTING

Throughout the interviews it became apparent that it was intuitive for the interviewees to differentiate between two types of knowledge when discussing knowledge transfer: Knowledge related to the medical profession, hereby referred to as *medical knowledge*. And the knowledge related to organisational matters such as processes and resource allocation, hereby referred to as *process-related knowledge*. The objective of this research is to explain how process-related knowledge is transferred between surgical departments. Thus, the processes associated with spreading medical knowledge have not been investigated in detail. Nevertheless, many of the interviewees distinguished between process-related and medical knowledge in order to provide adequate answers. Consequently, the following findings regarding medical and process-related knowledge are seen as relevant to the reader in order to understand the main results. Hence, the characteristics of medical and process-related knowledge as explained by professionals will be elaborated in the following:

4.1.1 *Medical knowledge*

Several hospital managers, especially those with a professional background as doctors of medicine, were prominent in emphasising the differences between medical and process-related knowledge. One of them explained medical knowledge as:

> *(...) what type of medication you use, what technique you use for a surgical operation, and the algorithm of occupational matters.*

> *Chief surgeon 10, Department leader*

Generally the interviewees emphasised a great encouragement towards sharing and learning new medical knowledge. According to one of the clinic leaders at a large hospital, this kind of knowledge is also especially easy to spread internally:

> *I believe knowledge that is "sexy" in some way, like cool electronics or some really interesting medications that really stimulate our intellect as professionals, that is the type of knowledge that is very easy to spread.*

> *Chief surgeon 4, Clinic leader*

Based on the findings from the collected interviews, it is found that medical, professional knowledge is spread via widely known and recognised channels, a strong pharmaceutical industry, and the professionals' strong desire to improve both their professional skills and patient care. Doctors and nurses regularly visit conferences and other professional events, and these arenas are highly utilised for spreading medical knowledge. Furthermore, there is a developed culture among professionals of visiting similar departments as their own at other hospitals, both in Norway and abroad, in order to learn techniques, procedures and new technology from each other.

4.1.2   *Process-related knowledge*

Interviewees describe process-related knowledge as knowledge related to the execution of their day-to-day work, logistics, and resource utilisation. Knowledge related to the organisation and health, environment, and safety are also within this category, according to a clinic leader. As previously mentioned, knowledge related to these aspects have been the focus of this research, and the remaining parts of the findings will describe the mechanisms that foster transfer of this kind of knowledge.

It is found that for many professionals this type of knowledge does not initially appear interesting or appealing. According to a specialised doctor within the top-level management at a large Norwegian hospital:

> *Knowledge about more day-to-day activities that maybe are far from our professional speciality, like knowledge about the organisation, health, environment, and safety, and so on is much harder to spread. Plainly because it does not spontaneously interest us. There are many other things we'd rather do than learn about organisational charts and such.*
>
> *Chief surgeon 4, Clinic leader*

The objective of this study is to increase the understanding of how process-related knowledge is transferred between surgical departments in Norwegian public hospitals. Naturally, the findings presented in the following will concern process-related knowledge.

4.2 QUANTITATIVE PRESENTATION OF CODED PROPERTIES

As explained in Chapter 3 the interviews were transcribed and coded. This section provides the general findings from the coding phase, hence it provides a quantitative look at the qualitative data. First, an overview generated from the output of the coding phase will be generated. The process of generating this output is described in Chapter 3.3.3. Second, findings regarding the most prominent properties from the collected data will be presented. These findings are included as they are the output from the coding phase, hence they provide an understanding of the variation in interview topics and show what properties have been most subject for discussion during the interviews.

4.2.1 *Properties ordered by magnitude*

Out of the 60 properties identified in literature, all were identified at one point or another when coding the interview transcriptions. This indicates that the interviews have been varied with a wide span of the whole theoretical field. The 20 most prominent properties are presented in Table 5. They are ordered by the properties' magnitude of all coded material. The percentages should be interpreted as how much the property in question has been talked about in the interviews relative to the others. However, it should be noted that a higher percentage does not necessarily imply that a property is more important for the eventual success of a knowledge transfer process than

others with a lower percentage, but is merely an indication of the property's relevance during the interviews. The full table with all codes can be seen in Table 8 in Appendix C.

Code	% of all coded segments
Leadership roles in knowledge sharing culture	6.43
Communication	5.96
Arena	5.72
Formal systems	5.64
Formal and informal social networks	4.39
Unprovenness	3.53
Culture	3.37
Cooperative norms	3.21
Relatedness	3.13
Time	3.06
Learning opportunities	2.90
Value of knowledge	2.66
Observation / Work in other departments	2.66
Conservatism	2.59
Shared cognition	2.51
Lack of motivation	2.27
Environmental stability	2.27
Competence	2.19
Champion	2.12
Physical distance	2.04

Table 5: The 20 most prominent properties

4.3   THE KNOWLEDGE TRANSFER PROCESS

The following presents the main results of this study, structured in accordance with the KTM presented in Figure 6.

The comprehensive interview process involving 45 professionals within the Norwegian health care system has contrib-
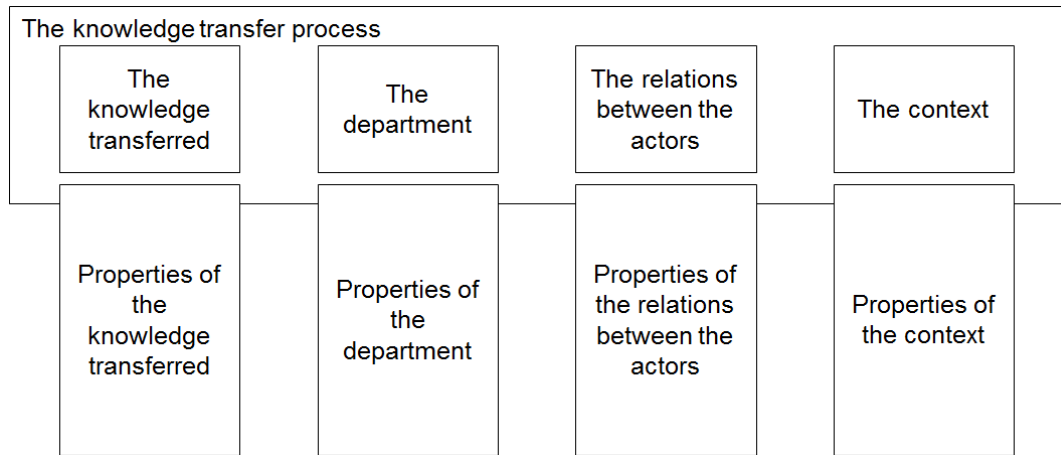
Figure 6: The Knowledge transfer model

uted to reveal how knowledge is transferred successfully or unsuccessfully between departments. These insights into how professionals act in knowledge transfer processes, what they value and how they believe processes can be optimised going forward will be presented throughout this Chapter.

Findings have been located within a very wide range of areas. In order to present them to the reader in a meaningful and comprehensible way they will be presented in accordance with the KTM. Even though a mutually exclusive and collectively exhaustive ordering of the findings has been aspired, there will be some extent of overlap between the properties presented.

The definition of the properties of the KTM will be provided where it is found to be necessary, in order to clarify these for the reader, and hence create a better foundation for understanding the findings.

4.4 THE KNOWLEDGE TRANSFERRED

In this section, the topics related to the knowledge transferred and their influence on the knowledge transfer process will be presented. Thus, the following topics that will be covered are *unprovenness and observation* and *knowledge relatedness*, as presented in Figure 7.

4.4.1 *Unprovenness and observation*

Unprovenness and *observation* are both properties found to be closely related to the need for evidence in order for a depart-

The knowledge transfer process			
The knowledge transferred	The department	The relations between the actors	The context
Unprovenness and observations Knowledge relatedness	Properties of the department	Properties of the relations between the actors	Properties of the context
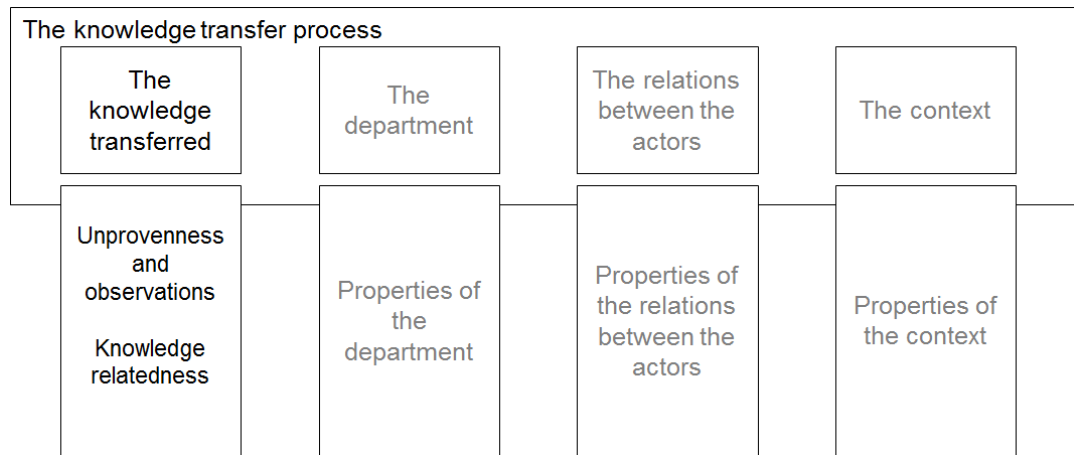
Figure 7: The knowledge transferred

ment to transfer and adopt new knowledge. As a consequence, the related findings will be presented together.

Unprovenness

Szulanski (1996) defines *unprovenness* as to whether the knowledge has a proven record of previous usefulness.

A key takeaway from the interviews is that evidence-based medicine has a strong foundation among the interviewees and in Norwegian hospitals. Evidence-based medicine is also a strong foundation for the work with standardised clinical pathways. Most practitioners accentuated that one of the most important aspects of a new process is that it has been proved to improve, or at least provide the same level of patient safety and care, as the current solution. There have not been found any differences between surgeons and nurses in this regard, this is a prerequisite for all professions. Health care workers eventually deal with matters of life and death, and in consequence there is a strong focus on only applying changes that have been thoroughly tested by the research community.

It is found from the interviews that this focus not only applies to medical knowledge, but also to process-related knowledge. However, for improvements in practise that are merely process-related it is not comprehended that managers and authorities demand the same academic evidence as with medical improvements in order to authorise a change. This what a nurse said when asked about the reasons for applying a change:

> You must have seen that it is a smart thing to do. And you must have experienced that it worked for yourself.

Nurse 6

Professionals seem to demand evidence, and it is not enough to tell them that changing something will lead to an improvement. They want proof, either in form of scientific evidence or by experiencing it for themselves, in order to understand why the new process or routine should be implemented. This is in accordance with literature, where perceiving the relative advantage of an innovation is a *sine qua non*, an essential prerequisite, for adoption (Greenhalgh et al., 2004). A professor at a large hospital emphasised this, and also reflected on the difference between science and opinions:

> *I find the term knowledge very interesting. Because first you have to know if it is real knowledge, based on science. And this is something vastly different from someone having a strong opinion. The latter is what I define as "religion". Today 30% of what we do is science, and 70% is religion.*

Chief surgeon 2, Professor

The interviewees agrees that as a consequence of the strict evidentiary requirements, performance measurements such as conscription time, re-admittances, waiting lists, and number of treatment-related errors are extremely helpful if they can be used to show to concrete results.

Observation
Observation is the act of visiting other departments and/or medical institutions and investigate how they are operating there, as well as share experiences with one another.

Nonaka (1991) argues that observing professionals is a vital part in the transfer of tacit knowledge, and observation also seem to be one of the most common ways for Norwegian health care professionals to gain access to new knowledge. According to the interviewees, the nurses and surgeons gain knowledge by reading national and international academic literature, by having secondments in equivalent departments in other hospitals, and by attending academic congresses. The interview subjects who talked about observation accentuated the importance of seeing a change or subject in action, and the importance of including the right people in the process.

An example of the identified importance of observation, was provided by a nurse in a leading position: A delegation was sent to another hospital to learn about a new process. They observed the excellency of the improvements of this hospital, and was excited to share the newly acquired knowledge to their colleagues. However, they were not able to transfer this enthusiasm to the rest of the organisation who had not observed it themselves. Hence, the transfer was unsuccessful. Then they sent another delegation with a more diverse professional background. When they came back, they managed to complete the transfer successfully.

The examples illustrate two findings regarding observations. First, observations is, according to the interviewees, an efficient way to make people believe in new improvements. Second; practitioners state that if the observation-strategy are going to have in effect, it is important to involve the entire value chain in the organisation. The last point is emphasised by a surgeon with managerial responsibilities:

> *We had been working with these things [a new procedure for patient handling] for quite a while before we actually realised that it would not be of any help if we just chanted that this is how they do at other hospitals. Everyone in the value chain had to join the observation and see the process with their own eyes. Surgical nurses, anaesthesia nurses, and definitely anaesthesiologists had to be present and actually see that things could be done differently. Only then were we able to do improvements.*

> *Chief surgeon 16, Department leader*

Delegations for observations are often sent to other hospitals. However, observation across departments is not found to exist to a considerable extent within either of the investigated hospitals. It is a fact that the medical differences are significant between many surgical departments. Many health care professionals therefore argue that observation across departments within a hospital is irrelevant. However, they mention that observation can be relevant for administrative and process-related methods, as these are often more similar across departments.

Personnel rotation between departments is also a means that fosters the possibility to observe other departments. As part of their surgical training, practitioners rotate between departments and hospitals. Interviewees express that the rotation of

practitioners often work as an inspiration; introducing them to new processes and routines from other departments or hospitals. In one Health Trust (HT) surgeons rotate between similar departments at two different hospitals, both within the HT. This is required by the manager to assure process and procedural quality between them. Such rotation may facilitate networks and build an understanding of possible differences, according to the interviewees.

An examples of how observation through rotation may facilitate knowledge sharing was presented by a chief surgeon. In his hospital, surgical nurses rotated between two departments. They experienced great differences in the quality of the work processes in those two departments. Consequently, they became frustrated when they had to work in an inefficient manner, since they knew that there existed a better way to do it. As a consequence, they managed to transfer the well-functioning processes to the inefficient department. A chief surgeon explained the process like this:

> *They rotated a bit between the departments. And when those who had been working on the surgical side rotated to the orthopaedic side they were really frustrated, because they had to work in such a stupid manner.*
>
> *Chief surgeon 1*

However, a potential downside related to the concept of observation through personnel rotation was found. According to the findings, people do not necessarily feel enough ownership towards a department when they are on rotation. As a result, they might not engage in knowledge transfer. A department leader argued that the reason was that when engaging in knowledge transfer, you have to be at the forefront. This takes energy. He argued that many do not have this energy when they are staying in a department only for a short while.

Summary

According to Nonaka (1991), observation is one of the most important means to transfer tacit knowledge. However, according to the above-mentioned findings practitioners rarely visit other departments within their own hospital, even though it could be one of the most effective ways to spread knowledge related to working methodologies throughout the organisation. However it is more common for professionals to visit corresponding

departments at other hospitals, most commonly as a means to learn new medical techniques.

Evidence-based medicine stands tall in Norwegian public hospitals, and much from this in essence medical mind-set is present when considering processes as well. As managers experience that subordinates demand evidence of improvements before accepting a change, they emphasise the importance of including the whole value chain in improvement and knowledge transfer processes. Performance measurements or other scientific documentation is also beneficial in this regard.

4.4.2 *Knowledge relatedness*

In the literature, *knowledge relatedness* is described as to which degree the knowledge of one unit is related or applicable to another unit's operations, goals and requirements (Szulanski, 1996).

There seem to exist a certain reluctance among the employees towards interdepartmental knowledge transfer because units are not necessarily medically related. More specifically, there seem to be a perception of that if one cannot cooperate on medical matters because of lack of medical relatedness, one most likely will not able to benefit from each others' organisational knowledge either.

According to the findings, a reason for why this perception exists is the high degree of specialisation of each department. Further, it is found that this notion of independence and expertise have nurtured a sense of isolation and alienation from departments of different surgical disciplines. According to the interviewees, this means that even though a department possess organisational knowledge which could be useful to peer departments, it will not necessarily transfer it to them.

Additionally, it seem from the results that there is a strong academic tie between equivalent surgery departments, both nationally and internationally, on medical procedures and research. This finding is in accordance with the results of Ditillo (2012); Szulanski (1996), who state that units with related competences is likely to transfer knowledge to each other. Park and Lee (2014) support this view and propose that the similarity of goals motivates the sharing of knowledge in collaborative and knowledge-intensive relationships. This finding is emphasised by a chief surgeon:

It is evident that when the orthopaedic surgeons were considering the new routine, they searched for help from other orthopaedic wards who'd already implemented it. And we have had people from other hospitals who have been here to learn how we do it, and been here too observe and potentially bringing it back to their own hospitals.

Chief surgeon 15, Department leader

However, the tradition for asking or advising a peer department within own hospitals are, according to the interviews with both surgeons and nurses, not the same. One example of this phenomenon has been found within one surgical department in a large Norwegian hospital. The department had successfully rearranged the surgeons' visit hours. The new routine made it possible to send home patients earlier on the day, so that they would not have to wait unnecessarily. This was not a really specialised invention, and could easily have been transferred to other departments, according to the surgeon himself. However, this was not done because the leaders and the initiators did not think they had the professional expertise to instruct other surgeons from other disciplines on the matter, nor did they think that they had the adequate insight into how others organised their workday. As they belonged to different surgical specialisations, one did not find appropriate to interfere with their business.

This [avoidance of transferring knowledge to departments within different surgical disciplines] is a very interesting phenomenon. I don't know how this is in other industries, but on hospitals, this is very typical. Instead of looking to your neighbour department, you go abroad.

Chief surgeon 18

The chief surgeon accentuated the findings. There seem to be a tradition for not seeking advises nor transferring knowledge to departments within other surgical disciplines. This is also in line with theory; Ditillo (2012) and Szulanski (1996) argues that units with related competences are more likely to transfer knowledge to each other. (Park and Lee, 2014) support the view and propose that the similarity of goals motivates the sharing of knowledge in collaborative and knowledge-intensive

relationships.

Summary
Thus, the findings show that a department is less likely to transfer knowledge if the receiving unit is not within the same surgical field. According to the interviews, this is a result of the perception that if one cannot benefit from the transfer of medical knowledge, one cannot benefit from the transfer of process-related knowledge. On the contrary, it has become apparent that a significant effort is put into learning from other surgical equivalent departments within the country or abroad. The findings is in accordance with Ditillo (2012); Szulanski (1996), who argues that if there is a low relatedness between units, one unit may have difficulties in transferring knowledge to other units.

4.5   THE DEPARTMENT

In this section, the properties related to the department of the knowledge transfer process will be presented, as depicted in Figure 8. Hence, the findings related to *motivation and incentives* and *champion* will be described.
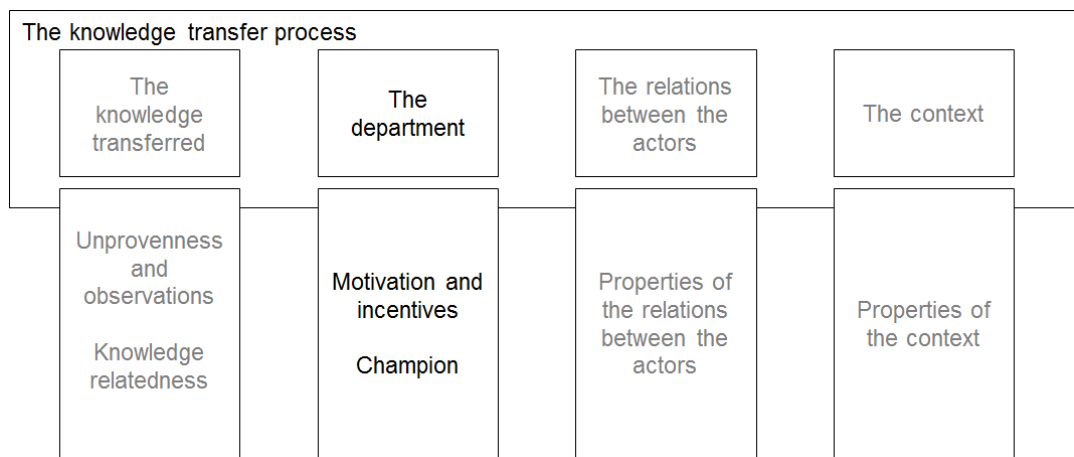

Figure 8: The department

4.5.1   *Motivation and incentives*

During the interviews there has been much discussion related to what motivates employees to participate in knowledge transfer and what kind of incentives are in place to urge such behaviour. Especially when interviewing personnel with managerial

responsibilities there has emerged a range of views on these aspects, covering a range of different theoretical properties. The most pronounced views will be elaborated in the following sections, as the properties *lack of motivation*, *incentives for knowledge sharing*, *interest*, and *outcome expectancy* are presented.

Motivation

Lack of motivation is defined in literature as "individuals do not regard that external needs or motives of selflessness are fulfilled by participating in knowledge transfer" (Szulanski, 1996; Wu, 2013).

Much effort has been placed in understanding exactly what motivates professionals in the health care industry to improve in process-related matters. There was found to be little variance in the collected answers, and the far most referenced motivational factor was found to be improved patient care. Improved patient care in this setting means to treat patients more efficiently by focusing the treatment and often by reducing recovery times while still, at least, maintaining the same level of care. Secondly, practitioners were motivated to improve their own workday by making it more efficient and by removing unnecessary tasks. Further leading to a more fun work environment, which employees obviously strive for.

> *I do not believe it is possible to force people to change. I believe it has to be related to motivation. If [an improvement does] not [offer] an economic profit, it at least has to offer a reward by improved patient care or that you in a way see how things function more streamlined, or by leading to an easier workday.*

> *Nurse 8, Department leader*

The department leader expressed something that has become apparent in the findings. Even though managers do not express an especially strong focus on motivation, they do seem to have a good interpretation on what motivates their subordinates.

Interview objects are clear in that motivation and willingness to change is a matter depending on personality. They argue that it is not dependent on age, even though that could be a common conception among non-professionals. Some managers state that younger generations are more willing to consider new solutions, whereas others say that there are many young surgeons and nurses who are resistant to change and many of

the much more experienced that are willing to implement new solutions. There are not found any specific characteristics of those who are less motivated to change, but this has not been a topic for the research either. Simultaneously people resistant to change can, according to interview object in leader positions, potentially strongly restrict the eventual success of a knowledge transfer process.

Incentives for sharing knowledge
In the literature on knowledge transfer, Salleh et al. (2011) describe *incentives for sharing knowledge* as the rewards or other motivations for why an individual should engage in knowledge transfer. This view is reinforced by Willem and Buelens (2007); Usoro and Majewski (2011); Verburg and Andriessen (2011).

There are found to be few clear incentives for personnel to share their knowledge or learn new practises. Managers have very few possibilities to reward people with monetary compensation schemes or by giving them more for vacation. The lack of economic rewards is due to the fact that the hospitals are public, and there is no tradition for such compensation at public hospitals in Norway. Therefore, the incentives are basically narrowed down to the individuals' own motivation for participating in these activities, i.e. most often to improve patient care or day-to-day activities for itself or its colleagues.

Some managers try to involve their subordinates in the economic achievements of the hospitals. However, a surgeon express that they are tired of constantly being pushed on economic matters. He stated that, among some subordinates, there exist a perception that their only reward for being more efficient would be one more surgical operation at the end of the day. In their eyes, this reward is not positive.

There seem to be a culture where people do not care much about the economics of the hospital. They hear about budget deficits all the time, but they find it hard to relate to them. An interesting view on the economic aspects of sharing innovations across departments were brought up by the nurse manager cited below. She argued that the high focus on budgets might lead some department managers not to share good working practice from their department with other departments if such a practice gives them a cost advantage:

> (...) if there are things that give you a competitive advantage, it is not certain that you will share it with your neighbour. When they run the budgets so tough, and with

an organisation with very limited resources, there are only marginal differences from break even until a hammering deficit. So if someone finds a competitive edge, I do believe many will choose to protect it.

Nurse 8, Department leader

However, many of the interviewed subjects emphasise that most health care professionals have motivations more on the emphatic, altruistic side. These professionals became health care workers because they want to help people improve their quality of life. This is certainly intrinsic motivation as described by Wu (2013).

Interest

Throughout the interviews the individual practitioner's interest in the subject has been found to be very important for the eventual outcome of a knowledge transfer process. Topics professionals perceive as interesting automatically gain more attention, both in formal and informal contexts. People are less hesitant to put down time and effort in solving problems they find interesting, and several surgical managers say that it is especially easy to spread knowledge about new medical technology. Overall practitioners seem to find knowledge with a strong professional feasibility as of particular interest or even as "cool". According to surgical managers examples of such knowledge are often new electronics or medications. That the innovation "stimulate the intellect of the professional" is perceived as important. On the contrary, many evidently tend to find knowledge about processes as boring and of little interest. Plainly as most surgeons and nurses care the most about those things that spontaneously catch their attention, such as cases directly related to their profession, rather than organisational charts and process optimisation.

Further it is argued that interest is a property that is highly dependent on personal attributes. However, some of the interviewed professionals argue that the level of interest practitioners have towards research is in their opinion influenced by their education. These argue that those with a higher degree of education, such as doctor of medicine, are more interested in performing and adapting to research, irrespective of the subject of the research.

Outcome expectancy

Outcome expectancy is the perceived result such as rewards, incentives, reputation, and appreciation for participating in knowledge transfer (Usoro and Majewski, 2011).

Managers say that one of the most important factors of a transfer is that the recipient actually perceives it as beneficial. If not, subordinates will not be motivated to carry on with the transfer process. As highlighted earlier, health care workers are careful that their time should be used for patient care, and most of them already have extremely tight schedules. Many managers argue that by this reason many professionals avoid spending time on brainstorming ideas and spending time on tasks that do not initially seem to provide benefits aligned with their interests. This behaviour is in accordance with expectancy theory. In expectancy theory the valence, or value of what one will receive for achieving the outcome, is a significant determinant for the level of motivation that will be shown for receiving the outcome (Watson and Hewett, 2006). The higher the valance, the higher the motivation.

In contrast to the perceived benefits, perceived costs associated with an innovation is found to negatively impact practitioners willingness to assess and implement it.

There is no doubt that virtually all practising health care professionals want to deliver the best patient care possible. However, the focus is most often on receiving improvements and best-practise from outside sources, in contradiction to spreading own ideas and improvements to other departments.

> *One is really more concerned with improving own business and interacting with the environment, rather than to pass on knowledge to others.*
>
> *Nurse 5, Department leader*

It does not seem to be a matter of bad will, but more of something that is not thought of and not prioritised.

Summary

The practitioners part in this research with a high degree of agreement point to their main motivations for improving work practises to being improved patient care and a more efficient work environment. Motivation seems to be mainly intrinsic, which academic theory argue should be a good foundation for a blossoming environment for knowledge transfer (Harvey,

2012). Furthermore, motivation might be restricted by few incentives for knowledge transfer. Relevant theory states that incentives are efficient, but underutilised in the public sector in general (Willem and Buelens, 2007).

Highlighting the benefits associated with a change or improvement is emphasised as expedient both in literature and interviews. Many of the interviewees indicate that this is one of their top priorities when implementing improvements. In contrast to perceived benefits, perceived costs influence knowledge transfer at an interdepartmental level.

4.5.2 *Champion*

A *champion* is described as a key person who sets the stage for learning by acting as an awareness-enhancing agent or an advocate for new competence development, or as a person who who uses his formal or informal position to discourage change (Mauborgne and Reneé, 2003; Nevis, 1995).

In the interviews, a champion is identified as a person who is not necessarily a leader, but a person with integrity, who knows the department well, and who has the authority and courage to support or discourage new initiatives. According to the interviewees, the champion is a person of significant influence on the knowledge transfer process, and can take the role either as a change agent, or as a conservative, as presented in the following.

The change agents
In one of the hospital investigated, a significant share of the surgery departments had been able to implement a highly effective operation program with focus on task slippage and parallel work in order to achieve seamless operations. The program was initiated by a person in a leading position who had been a longstanding proponent of increasing the efficiency in the operating rooms. By actively advocating and following up on the new program, he gradually introduced it as a part of the everyday work life of the departments. However, one department did not implement this new system, even though they knew that the program had led to strikingly good results. It took two years, including an observational trip abroad, before the department made a decision and managed to implement the same procedures as everybody else. In the first departments mentioned, the initiator was a driving force behind the implementation,

ensuring that the new program was thoroughly incorporated in the daily routines. In the last department there were people in leading position who did not want to be included in the new program, and no one in the department advocated for change or opposed to this decision. As a consequence, the initiator did not have the opportunity to transfer the knowledge to this department, according to the initiator himself. He stated the following:

> *Whether you achieve something depends on the individuals [colleagues]. There is no doubt about that. That is why I say that you are dependent on having someone who is actually willing to be at the forefront.*

> *Chief surgeon 1*

From the results, there appear to be two rather important features of a change champion which facilitate the adoption of new knowledge.

The first feature seems to be the integrity of the person who is defined as a champion. According to the interviews, a person who advocates for an initiative is more likely to have a real influence on the people involved in the process when he or she is a respected and well-known colleague. This finding is in line with what is found by several researchers, who points out that it is the champion's informal status in particular which is a critical source of social influence (Karl E. Weick, 1999; Julie Battilana, 2013). Furthermore, the interviewees emphasise that employees have more of an ownership to the new routine when the driving force of the change is a person they know and trust, even if the routine undermine long-cherished methods. The second beneficial attribute of a champion identified, is that the champion often is there in the everyday life. In this way, he has the opportunity to follow up on the change on a daily basis, constantly advocating the new knowledge if it is necessary. In this way, he or she reminds people of the importance of the new routines until it is thoroughly incorporated in the daily work and procedures.

Although there exist champions in a department, the findings show that a systematic lack of time and resources, as well as a short term financial pressure erode the initiative from such champions. Thus, the existence of champions alone does not seem to guarantee a successful implementation of knowledge from other departments. However, according to the interviewees

they represent important informal mechanisms to perform change. This finding is in accordance with the literature, where Kotter (2007) points out that there is a need for persons with initiatives outside of formal boundaries, expectations, and protocols, in order to achieve major transformations.

The conservatives
In the literature, the conservatives are defined as powerful naysayers, which will fight in order to resist the change (Mauborgne and Reneé, 2003).

Through the interviews it becomes apparent that some employees with a certain influence act as conservatives. By the results, a conservative is a person who is reluctant or unwilling to adopt to new or more efficient and effective routines.

> *It [the department] is like an old ship that creaks if you try to change direction just a tiny bit, because there are so many academic groups which have to consent to the change.*
>
> *Surgeon 3*

According to some of the interviewees, both surgeons and nurses, the conservatives may often be colleagues of a certain age and organisational tenure, who regard themselves as experts, without the belief that anyone else might have anything to educate them on, as they are the most experienced. Further, the interviewees have argued that the real reason for the conservatives' resistance against change may be the fear of not being as useful and irreplaceable as before the potential change. Thus, the conservatives seem to fear that their positions may crumble if new changes are implemented. Mauborgne and Reneé (2003) support this finding and claims that "even if an organisation has reach the tipping point, powerful vested interests will resist the impending reforms in order to defend their positions."

Laziness is referred to as another pillar of conservatism in the interviews. According to several surgeons, old routines represent comfort. The interviewees argue that conservatives appear to think that by adapting to new routines, the work pace and activity will increase, something they regard as negative. However, it is pointed out by both surgeons, chief surgeons, and nurses that the most conservative colleagues are often those who rarely are exposed to change, and therefor lack proof that change eventually ease the workday and increase the efficiency

at the same time, and not necessarily lead to an extra workload. This finding is in accordance with those of Greenhalgh et al. (2004), who state that if a project is insufficiently appealing, it will not attract the support of key opinion leaders.

The interviewees point out that conservatives, with their integrity, tenure, and pessimistic appearance, in many cases erode initiatives to adapt to or transfer knowledge to other departments. Furthermore, the interviewees state that this attitude is often contagious, influencing otherwise positive or neutral colleagues to become opponents of change. This finding is partially aligned with the literature, as conservatives, also referred to as nay-sayers, are found to be local negative influencers who will will fight to protect their positions more fiercely and vocally, the more likely a change becomes (Mauborgne and Reneé, 2003). Furthermore, it is stated in the literature, that their resistance can seriously damage, even derail, the reform process as they to possess a certain integrity and power (Mauborgne and Reneé, 2003).

Summary

From the results there seem to be a consensus on that champions as change agents are of a significant value in the adopting phase in the knowledge transfer process. They encourage to an active and open culture in the integration of new routines and procedures, both in the findings in the study, and in the literature (Greenhalgh et al., 2004; Karl E. Weick, 1999; Julie Battilana, 2013; Nevis, 1995). As a contrast, the conservatives may impede knowledge transfer by using their integrity and often powerful positions, to efficiently sabotage and influence other neutral parties, a finding which is in line with(Mauborgne and Reneé, 2003; Greenhalgh et al., 2004)'s arguments.

4.6   THE RELATION BETWEEN THE ACTORS

In this section, the findings concerning to the relation between the actors will be presented. Hence, the following topics are *channels* and *arenas for knowledge transfer*, as given in Figure 9.

4.6.1   *Channels*

Different kinds of channels encompass several of the properties from literature and the coding process. These are *communication, formal channels, informal channels*, and *social ties*.
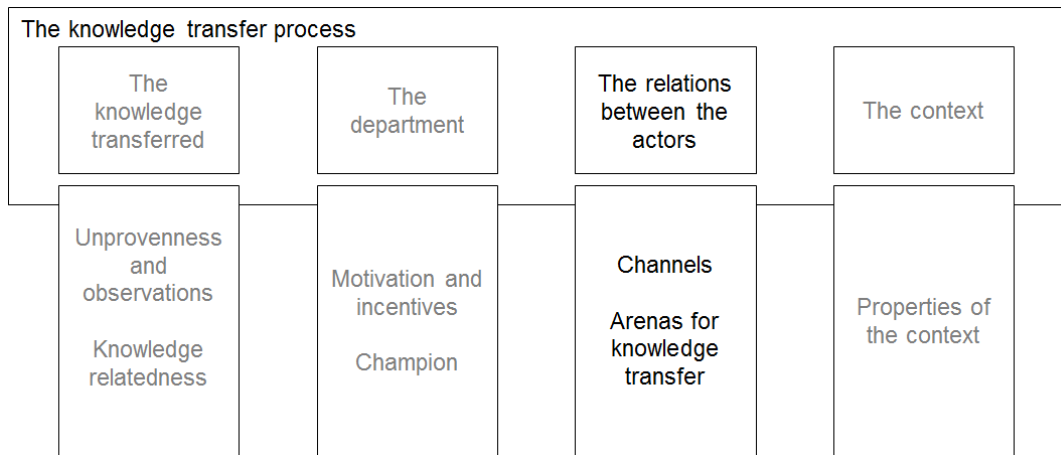
Figure 9: The relations between the actors

Actors from all levels; clinic leaders, department leaders, surgeons, and nurses alike, emphasise the importance of having some insight into the state and processes at other departments. It is essential, as they must attain an understanding of in what ways the various departments are doing things differently in order to identify candidate procedures and practises for transfer. Either because their home department is performing better than their peer department, or vice versa.

Communication
Communication is defined as "to which degree there is an exchange of meanings and information between the entities in the organisation" (McLaughlin, 2010).

In a hospital context, communication often happens as a direct interaction between people, and the communication climate is highly dependent on actors' personal attributes.

> *I believe this [knowledge transfer] depends on attributes at the personal level, on the quality of those that are in positions where we truly need the out-most art of communication and interaction. However, these are obviously qualities that are held to a varying degree.*

> *Nurse 5, Department leader*

Based on interview data it is clear that the necessity of swift and clear-cut communication is stressed by the actors in knowledge transfer. Managers bring up the necessity of having of a good communication climate and a culture that accepts various proposals when talking about how they learn about potential improvements. It is found that ideas often manifest in

subordinates when they interact with professionals from other departments, either within the hospital or when visiting other hospitals. When an idea is brought up for the manager he or she must know or be told where to find more information and be able to extract the needed information from various sources.

Formal channels
Chandler (1962) defines formal social networks as those that are prescribed and forcibly generated by management, usually directed according to corporate strategy and mission. Examples of such are formal program meetings with objectives and deliverables (Verburg and Andriessen, 2011).

Both in theory and empirical findings it is argued that the formal and informal social networks are key-elements in building that cross-understanding of how people actually work at different departments. Doctors and nurses alike point to departmental meetings, multidisciplinary team (MDT) meetings, and communication through official channels in the organisation as the most present and efficient formal structures in the hospital organisations.

Based on research data it is understood that formal channels are generally used to discuss specific medical cases and to transfer medical knowledge. They are less used for discussing matters regarding day-to-day processes and operations.

Other formal channels in use at the hospitals are ICT systems. Procedures and treatment methodologies are saved in online databases, and these systems are also used to save treatment-related information and for communication between professionals. The ICT systems are also used to collect research data and share it with relevant personnel.

Informal channels
Informal social networks are unsanctioned and ungoverned organic structures connecting a potentially unbound group of individuals (Mintzberg, 1979).

Exploitation of these channels is referred to as when colleagues meet in the hallways or in the canteen for lunch, or other similar occurrences. It can also be friends from both within and outside the hospital that meet in after-work settings and so forth. During such meetings it is found that people find it more natural to discuss day-to-day activities or exchange experiences regarding specific cases, especially compared to what they do at formal meetings.

In this study informal channels are found to be of much more frequent use than formal channels when professionals are searching for potential improvements. This preference is also present in Allen et al. (2007)'s study. There it is emphasised that technical employees are up to five times more likely than other staff to turn to a person, rather than a data source, to obtain information important to their work. Even without quantitative measurements, there are indications that such a high preference for informal structures apply to health care employees as well. A nurse manager explained her view on the importance of informal channels for knowledge transfer:

> *When I discover things that we could do differently or think differently about, I believe informal channels are more important [than formal channels]. Because then I can set the agenda I want, enlighten the problem definition I want, and initiate the interaction I want.*

> *Nurse 5, department leader*

Several interviewees highlight the informal interaction during lunch hours as extremely important for transferring process-related knowledge. They say that this is where they have the opportunity to meet colleagues from other departments in a setting where it is more natural to talk about day-to-day activities. This is also when they actually have the time available to discuss such matters. Most practitioners say that limited time during working hours is a significant limitation as to how they can prioritise discussing and developing improvements on process-related issues with peers. By this reason, the lunch hours are accentuated as good opportunities, as it is a setting where it is found they both have time available and it is natural for these kinds of matter to appear in discussions.

One of the hospitals part of the research was recently reconstructed, which lead to major changes in the building design and internal structure. As part of this redesign they went from having a shared canteen for the whole hospital to having many smaller canteens located in each of the buildings. Many of the departments even got their own private lunch areas. Doctors and nurses at this hospital stated that this alteration severely impacted knowledge sharing between entities. They would no longer meet colleagues outside their own department, and in consequence they lost one of the most efficient opportunities for discussing the matters of interest.

As pointed out there are few problems of transferring medical knowledge between the departments, and there is also found from the collected data that there exist a wide range of formal arenas to transfer medical knowledge. However, it is emphasised that there are few, if any, formal arenas to transfer process-related and organisational knowledge. This leads knowledge transfer of these matters to mostly be transferred during day-to-day activities. People extend their social networks when they cooperate with colleagues from other departments during complicated operations and during formalised discussions about patients.

The emergency room is an arena where people interact with colleagues with other medical specialisations, and is an influential arena to extend social networks. In these arenas interviewees state that it can be natural to talk about how processes and procedures are carried out at their home departments, hence it is a way to extend their horizon on differences in practice within the hospital. A chief surgeon at a large hospital elaborated on his view on how process-related knowledge is transferred at his hospital:

> *I believe it works in that you look at departments that have accomplished things. You hear about it and contact them informally. Maybe we ask someone from that department to come to us and educate us in what they are doing.*

> *Chief Surgeon 19, Department leader*

Virtually, this communication can happen in many ways. Often informal channels will be enough to gain the needed understanding, but if not formal channels will be exploited in order to find a person with competence on the matter. However, based on findings informal channels are utilised to a much larger extent than formal networks when it comes to successfully transferring process-related knowledge in Norwegian public hospitals.

Social ties

In academic literature *social ties* are referred to as "strong or weak information-carrying networks between people" (Usoro and Majewski, 2011).

The necessity of knowing the right people have been brought up by several professionals, often at managerial levels. Empirical findings show that when people know each other better,

they are more likely to discuss matters more openly and be less resistant to avoid discussing problems due to the eventual discomfort often associated with such discussions. Managers also state that they are more likely to appraise and evaluate a suggestion when it comes from someone they know have good intentions. These points are twofold, so similarly managers seem to be more likely to discuss and share own improvements with people they know better as well.

A problem identified at large hospitals is that the organisations have so many members and there is such a rapid change of personnel that maintaining an overview of people's position and competences becomes difficult. At smaller hospitals this is found to be less of a problem, as people meet more often and build stronger social ties among them.

The importance of social ties and informal channels are further clarified when it comes to how organisational members should be induced to accept new procedures. A professor with experience from change processes from several Norwegian hospitals explained the importance of knowing the right people and building support before effectuating a change:

> *There is work to be done before you can come and say: "Listen up everyone, I have a great idea, from now on we are going to do this and this". That never works. You need to have meetings in front, know the community, and maintain contact with the right people. Then it turns out all right.*

> *Chief surgeon 2, Professor*

Strong ties and hence relationships are further found to lower the barriers that are functioning as impediments to knowledge transfer. A clinic leader explained that he did not perceive any barriers at all among his closest collaboration partners. For the departments that he experienced as more remote, he perceived the barriers to be quite a bit higher. This finding is supported by Brown and Reingen (1987), who found that active information seeking is more likely to occur from strong-tie rather than weak-tie sources of referrals. Practitioners with experience from both small and large hospitals have said that they believe social relationships are stronger at the smaller hospitals. This findings is also in accordance with those of (Brown and Reingen, 1987), who state that at larger hospitals one are more dependent on

weak ties to serve important bridging functions that allow information to flow from one densely knit subgroup to another.

Summary

The empirical findings show that knowledge about improvements and new best practises are commonly spread through informal channels at the outer branches of the organisational hierarchy. Brown and Duguid (2001) highlight that knowledge-intensive work is generally conducted in a manner removed from that prescribed by formal procedures and organisational charts. They argue that such work can be threatened by strict adherence to such structures. In this study there is found that informal networks are utilised and preferred to formal networks when it comes to sharing process-related knowledge. Apparently the findings in the study are in accordance with relevant theory on the field. Brown and Duguid (2001) argue that the distinction between formal and informal networks is clearly less important in smaller organisations, which is also supported in the findings.

Communication is essential in transferring knowledge about new practise and innovation to candidates for transfer. In this regard the informal communication channels are by many highlighted as most efficient. However, communication can be impaired by personal attributes of actors unwilling to listen to the contributions of others.

Social ties seem to play a crucial role in successful, interdepartmental knowledge transfer. Weak social ties serve as bridges between the different parts of the organisation, and are important in order for practitioners to hear about learning opportunities. It was indicated by practitioners that social relationships are more stable in smaller hospitals than in larger. That is, professionals more easily gain an understanding of who to contact with different matters.

4.6.2   *Arenas for knowledge transfer*

Having arenas for knowledge transfer has been emphasised as an elementary prerequisite for knowledge transfer by several of the interviewees, and a more detailed elaboration will be presented in the following sections.

Meetings

All interviewed actors said that they regularly attend meetings

of different nature. There are found many differences between the departments and hospitals with regards to the frequency of meetings, but there are some clear trends to be found anyhow. Most departments are found to have formal meetings, some of them even every day, where matters regarding the daily operations in the department are discussed. In this setting "daily operations" refer to information regarding newly admitted patients, how patients are progressing and so forth. Practitioners say the meetings have a strict agenda that participants want to maintain, so there is no time to discuss other matters. Many actors emphasise that there is too little time to discuss processes and procedures during these meetings, and that such face-to-face activities under many circumstances would be preferred over electronic means such as e-mails. This finding is in accordance with those of Cummings and Teng (2003), who argue that face-to-face meetings are superior to other meeting or transfer formats in the transfer of strategically important matters, and that they are preferred ahead of email, directives or virtual teams, as the richness of knowledge tends to be lost without face-to-face interaction.

Multidisciplinary team (MDT) meetings are a formal arena where professionals from different departments meet and social networks are formed. At MDT meetings participants discuss complex patients cases and medical issues they are faced with at the moment. These meetings are consequently an arena that is being used to transfer knowledge between departments, and practitioners explain this is the sole purpose of the meetings. However, based on data available through this research MDT meetings are not found to be an arena for transferring process-related knowledge, merely medical. Many interview objects, from all levels of the organisation, but with a gravity on the lower levels of the hierarchy, express a desire for other, more informal meeting arenas. At these they want to discuss other topics than those highly medically related.

At one department they do try to have informal meetings every Friday. Both doctors and nurses can attend these meetings, and they are seen as a good arena to debate potential changes in the work processes, as well as sharing new ideas and observations. Unfortunately, they say, many employees at the department find it hard to prioritise attending such meetings, and managers say that it would be almost impossible for them to force subordinates to attend, because it would directly reduce time available for patient care. Additionally, the shift

routines in the hospital context makes it hard to find times where all employees can attend.

> *The most powerful driver for knowledge transfer at our department is our internal specialist meetings. They are absolutely the most important thing we do.*

> *Chief surgeon 6, Department leader*

Overall, the impression is that there exist meeting arenas for sharing process-related knowledge, but that these are under-utilised in all hospitals part in this research. There are differences between the departments and hospitals, but all of them seem to have several arenas for sharing medical knowledge. However, it is very difficult for practitioners to utilise these arenas for other purposes due to priorities and time-restrictions. There is also expressed a desire to include more professions in such meetings than what is done today.

Work across departments

The importance of arenas where people from different departments can actually meet, see each others' work, and understand the processes at other departments have been highlighted during the interviews.

Ways to maintain these shared spaces were highlighted during the interviews, and rotation between departments, emergency room duties, and observation at other departments were highlighted in particular. However, these means are not always easy to utilise, as a department leader explained:

> *(...) but it is really hard to get into other departments and figure out if they have done something smart. So the lack of a meeting arena for discussing these things is a great weakness at this hospital.*

> *Chief surgeon 13, Department leader*

At one of the hospitals the emergency room is operated by personnel from most of the surgical departments with a rotating duty arrangement. Practitioners are not allocated at fixed teams, but are placed at new teams with professionals from other departments every time they are on duty at the emergency room. Research has shown that transferring knowledge

via personnel movement can be effective. For instance, Galbraith (1990) found that technologies transferred more swiftly between manufacturing entities within an organisation when personnel from the donor entity worked temporarily at the recipient unit. Further, Allen (1984) found that transferring knowledge through personnel movement enabled organisations to alter knowledge to better fit new contexts. However, the findings are not in accordance with literature. It is found that the rotating duty arrangement rather discourage knowledge-transfer efforts:

> *Fundamentally the emergency room would be an ideal arena for sharing and creating innovation and sharing ideas to foster change. (...) that was the original thought behind its design [the rotating duty arrangement] as well. However, when we dig a little deeper and start looking at this with incentives, reward structures, and these kind of things, you understand that you will not receive any acknowledgement by going to your neighbour's surgery room and help them. On the contrary, you may actually be criticised by your own colleagues, as you should rather have been with them helping them do their work. This culture is so deeply incorporated in the organisation that it is hard to do anything about it.*

> *Nurse 8, Department leader*

The emergency room at this large hospital is the clearest example of cross-departmental work that has been found in the research process. It is common for professionals to visit other departments when learning specific procedures, often after hearing about them at conferences. However, cross-departmental work during normal procedures are rarely found, even though it is understood to be a great arena for successful knowledge transfer.

Conferences and lectures

One of those arenas that most professionals first point to in regards to knowledge transfer is conferences, both domestic and abroad. Many highlight different conferences as the most important arena where they are inspired to do improvements. However, most of these are concerned with medical knowledge and spreading information about new treatment methods and practises, but there also exist those that are concerned with

process-related knowledge. One example is fast track seminars, that are arranged on a yearly basis one of the university hospitals. The concept of fast track surgery is described in Chapter 2.8. These seminars are understood to be merely process-related. However, processes are often found to be presented in relation to more medically aimed conferences as professionals meet at those and discuss day-to-day activities as well as medical procedures.

Further there seem to be a wide acceptance for holding more informal lectures upon request. A clinic leader at a surgical clinic at a large hospital said that they often had operational meetings within their clinic where they discussed processes, and also that other clinics were very welcoming if they approached them and asked for advice from similar processes. There seem to be quite common that people willingly share their knowledge if they are approached by others in need and they do have spare time, but it is a rare event that those with an good innovation within their department approach others in order to spread it:

> *There exist an arena for sharing, but I guess the most of us are more engaged in improving our own operations and cooperate with the surroundings, rather than spreading to others.*

> *Nurse 5, Department leader*

There is no evidence to question the general good intentions of Norwegian health care professionals, but this is another example of how tight schedules and measures on efficiency impede knowledge transfer opportunities. People are found to willingly share their knowledge if they are asked to do so, but there is no tradition for pay a visit to other departments and actively encourage them to improve their own processes.

Summary
Face-to-face meetings are found to be a common arena for knowledge transfer in Norwegian public hospitals, however there is a focus on using them to talk over medical matters. Due to time constraints and set agendas at these formal meetings, many health care professionals emphasise a desire for more informal meetings that can be used to discuss process-related innovations and improvements.

At one of the large hospitals part in the research the emergency room is operated with rotating teams from most surgical departments at the hospital. It was created in this way in order to be an arena for learning new procedures and methodologies, however it does not work as an efficient arena for knowledge transfer in practice. Kane et al. (2005) argue that mechanisms for personnel rotation should adapt for knowledge transfer, consequently there is a divergence between theory and practice in this case.

Medical conferences are found to be the unprecedented most common source of interaction with professionals from different hospitals, and hence the most common source of learning new knowledge. As often found in this study there is a focus on medical knowledge, but there do exist some conferences reserved for process-related knowledge.

4.7 THE CONTEXT

A presentation of the findings concerning the organisational context will be presented in the following, as given in Figure 10. In the following, findings regarding *leadership*, the *work environment*, *physical distance*, and *resources* are described.
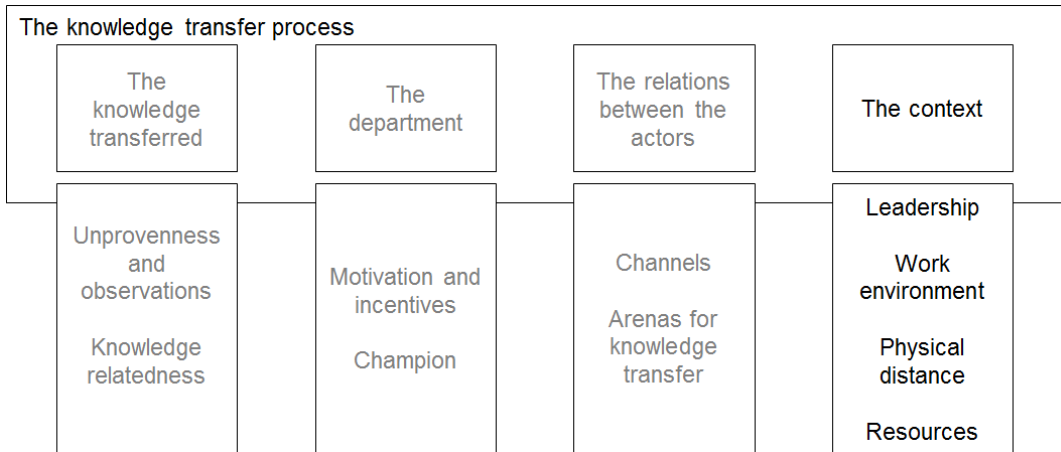

Figure 10: The context

4.7.1 *Leadership*

In the literature *leadership roles in a knowledge sharing culture* is defined as a "leader's behaviour and leadership styles and whether it encourages knowledge sharing" (Harvey, 2012).

The findings show that the influence of leadership roles are emphasised by both managers and subordinates. This result is in accordance with the literature, were several researchers have identified that leaders influence the organisational context and hence the knowledge transfer processes (Carmeli et al., 2011; Han et al., 2010; Harvey, 2012). However, it appears that there are certain dissimilarities in the view on how leaders should act in order to create a work environment and culture fostering successful knowledge transfer. In the findings, the different views have emerged into two distinct perspectives. The first perspective is leadership roles from an implementation point of view. The second perspective is leadership roles from an active sharing standpoint.

Leadership and implementation
Findings show that leaders often see themselves as an intermediary person, where one of their tasks is to communicate information such as decisions made by the board of directors, political decisions, and new routines of collaborating units to their subordinates. A major part of the leaders interviewed see it as their responsibility to ensure that the information or knowledge received is, if necessary, successfully implemented in the department. A range of actions taken to obtain this have been presented throughout the interviews; training and education, monitoring of the implementation process, and a systematically measuring of the results.

According to the literature, such actions may facilitate knowledge transfer (Carmeli et al., 2011; Han et al., 2010; Argote et al., 2000). Mauborgne and Reneé (2003) for instance, states that: "By exhibiting behaviour so that subordinates feel that their expectations and needs are taken care of, transformational leaders are able to strengthen followers' motivation to help and support the leader." However, one action is repeatedly referred to as the most important taken as a leader in the implementation phase: To establish of a common understanding of why the department should care to implement the change or to use the new knowledge.

> Surgeons are "eagles who fly majestic", so you have to be wiser than them. You cannot force a surgeon to join a change. You have to get him to understand that there is a reward both for the patient and for the surgeon [by implementing the change].

Chief surgeon 9, Department leader

A majority of the interviewees express that if and when the leaders manage to make their employees realise why they have to change, then the change or the new knowledge has a much better chance of actually surviving an implementation phase and becoming a part of the daily routines. According to the subordinates interviewed, they are much more likely to establish a sense of ownership towards the new routine if they understand why they are implementing it. The importance of such ownership is emphasised by several researchers. They have found that employee empowerment enhances the individual employee's psychological ownership towards the organisation (Han et al., 2010; Carmeli et al., 2011; Harvey, 2012). Additionally, increased psychological ownership is found to enhance the employee's altruistic spirit, which in turn makes it more willing to share knowledge according to Han et al. (2010).

There seem to be a consensus among the interview objects in that if leaders do not take any responsibility for monitoring and implementing a change, then the change is most likely to fail. They further express a perception that this can be an indication of no apparent leadership roles in the organisation. According to the interviews, the symbolism in the absence of a leader is highly crucial for the success of a knowledge implementation: If it is not important enough for the leader to follow up on, why should the employees?

A nurse department leader provided an example of how the absence of a leader may erode implementation processes. The example concerns the establishment of emergency rooms as a knowledge sharing arena, where the workload was distributed very differently between departments, and leadership was said to be vague:

> *If you had a leader at the emergency room with actual ownership [decision power] of the personnel, she could have said: "Listen, here at the emergency room we are "us" [together]. Here we are working interdisciplinary". As long as the personnel do not feel that they have this shared leader, but look to their usual department leader which says "Well, we have to take care of ourselves", it will not work. But the emergency room would have been a huge arena for sharing knowledge.*

Nurse 8, Department leader

The lack of a designated leader with exhaustive control of the personnel in the acute function is in this case interpreted as a root cause of unsuccessful knowledge transfer. Utilising the emergency room as an arena where different professions and medical specialities meet should foster a shared cognition of best practice working methodologies. However, the lack of clear leadership and managerial focus at other department play a role in diluting the potential benefits.

Leadership and active knowledge sharing

From the active sharing-perspective, it has become apparent that the leadership role takes on a new meaning. According to the data, the active sharing of knowledge is encouraged by leaders who promote an innovative and open culture where initiatives to share new ideas and proposals are rewarded. This is in accordance with the literature, where it is argued that leadership is important to knowledge sharing, because leaders by using charisma and individual attention are able to encourage the individuals to share knowledge (Carmeli et al., 2011; Han et al., 2010; Argote et al., 2000). A nurse explains the reason for the success of a knowledge sharing activity like this:

> *I think much of it [the successful knowledge transfer process] is thanks to the fact that my cooperatives and I have a leader who is very including, very interested in cooperation, and is an enthusiastic and wonderful woman.*

> *Nurse 7, Department leader*

Through the interviews, it has been found that most hospital departments communicate by strict hierarchical lines, letting the leaders transfer the ideas between the departments. This means that if a subordinate has a proposal or feedback, he or she first have to go to the department leader, who then may spread the proposal in a horizontal manner. The majority of the interviewees express that there are no formal system for these kinds of proposals. The exception is the error reporting system, which is only used occasionally, as it is viewed more as system for reporting errors rather than a system of ideas for improvement.

The subordinates and leaders interviewed have stated that, as a consequence of the strict hierarchical structure, the interdepartmental sharing of knowledge to a high degree is dependent

on the leader's personal willingness to share new ideas, engagement, and initiative. According to them, this causes the leadership role to become crucial in the active sharing of knowledge between departments. This is partially in line with Greenhalgh et al. (2004)'s findings, which entails that management support, advocacy of the knowledge transfer process, and continued commitment enhance the success of sharing knowledge.

In addition, findings show that there is a high level of respect for the other departments, and an inherent resistance to interfere with other departments' "businesses" and "tell them what to do". As a consequence, nurse department leaders, chief surgeons, and even clinic leaders seldom inform other departments themselves of what they have done if some of their new routines have proved to be successful. Consequently, in order to share successful innovations departments are at mercy that leaders of other departments pick up on their results and are interested in learning how to implement them.

Summary

It has been found that several structural mechanisms in hospitals implicitly give leaders a responsibility for transferring knowledge to their subordinates. Furthermore, the findings show that leaders encourage knowledge transfer behaviour if they take actions which contribute to the overall understanding of the implementation of the new routines, increasing the ownership to the new processes and empowering the employees in the knowledge transfer process. This finding is in accordance with the existing literature, where researchers emphasise that leaders, by exhibiting transformational leadership and by building high-quality leader-member exchanges, fulfil an important role in the development of employee relational identification and organisational identification which, in turn, leads to increased knowledge sharing in the firm (Carmeli et al., 2011; Han et al., 2010; Kotter, 2007).

4.7.2   *Work environment*

Several researchers emphasised the need for for a learning environment in an organisation in order to facilitate knowledge transfer (Cummings and Teng, 2003; Howell and Annansingh, 2013; Glomseth et al., 2007; Kim et al., 2012; Szulanski, 1996; Michailova and Gupta, 2005).

According to interviewees, both in leader and subordinate positions, the environmental stability and the culture in a department are properties which to a considerable extent influence the work environment and the knowledge transfer processes within it.

Environmental stability

Michailova and Gupta (2005) define work *environmental stability* as the "rate of change in the nature of the environment".

According to the findings, environmental stability seems to be highly influenced by the nature of the surgical operations. Through the interviews, it became apparent that it is the ratio between acute or elective surgery in particular that influence the environmental stability of a surgical department.

Elective surgery includes the planned operations in a hospital, as explained in the Conceptual background in Chapter 2.8.2. Planned operations seem to allow a stable and predictable work environment, as they imply that the employees know what is demanded of them at what time. As a consequence, the employees also know at which part of the work day they are available for extraordinary work activities, such as meetings and education. However, several of the surgical departments represented in the study have a high share of acute surgeries. Acute surgery comprises operations which have to be taken hand of in a short notice, and are in most cases given a higher priority than the elected surgeries. As a result, departments with a high share of acute surgery frequently experience that their schedules are delayed, which again leads to time consuming reallocation of resources such as surgeons, nurses and operating rooms.

There seem to be a consensus among both nurses and their leaders, as well as surgeons, chief surgeons and clinic leaders that the unstable work environment brought with acute surgery, are compromising the quality of knowledge sharing activities. The first reason given for this is the evident lack of possibility to plan formal knowledge sharing activities such as meetings and seminars. Another reason given in the interviews is the lack of time for informal knowledge exchange between surgeons and nurses on different departments, such as lunch breaks, and time in between surgeries to discuss the work tasks and share thoughts and ideas about these. In one department, a surgeon told that he almost never had lunch, but ate on his way to the operating rooms, due to a continuously changing

schedule. This meant that he seldom had the opportunity to speak with colleagues from other departments.

In addition, it seems like the majority of the interviewees found it unrealistic, unjustifiable, and irresponsible to spend time on knowledge sharing activities if they are behind the operating schedule. All extracurricular work activities are perceived as "stealing time" from the patients. In other words, the results show that an unstable environment with constantly interruptions as a consequence of a high acute surgery ratio in many cases erode the opportunities of knowledge sharing between departments. This result is not completely in accordance with findings from the literature. On one hand, Argote (2013) agrees with the finding and argues that interruption in the production can lead to knowledge decay or depreciation, which supports the results of the study. On the other hand, she also states that interruptions can provide opportunities for knowledge transfer (Argote, 2013) .

> *Here [in an elective hospital], I experience more effective transfer of improvements, and that people have time to talk to each other because of a slower pace, and things are planned so that you know what is next. But on acute hospitals, which most local hospitals are, you don't have time for discussions like these, because there you have to be a firefighter most of the time. Since people [patients] keep on coming in, and you never know what's next.*
>
> *Surgeon 3*

In departments with a high degree of elective surgery, the interviewees expressed that the employees had more time to discuss routines and work tasks, as the time available is more predictable and hence, allocable. There is nevertheless no evidence for that an increased amount of time between the operations due to a planned workday contributes directly to successful knowledge transfer between the departments. This finding is neither confirmed, nor disproved in the literature investigated.

Culture

Howell and Annansingh (2013) defines *culture* as "A shared set of norms, values and perceptions which develop when organisational members interact with each other and the environment".

There seem to be a consensus among the interviewees that a knowledge sharing culture is a culture where leaders and colleagues motivate employees to share knowledge by valuing new suggestions, and take them seriously. In the eyes of the interviewees, the success of knowledge transfer behaviour is dependent on a culture of acceptance where distributing or criticising new ideas to other surgery departments are seen as a contribution, and not complacency. Several researchers support this finding, such as Howell and Annansingh (2013); Cummings and Teng (2003); Argote (2013); Howell and Annansingh (2013); Glomseth et al. (2007). (Argote, 2013) emphasises that a culture of psychological safety that lacks defencive routines has been found to facilitate learning. She states that "When members feel psychological safe and free to express their ideas, organisations are more likely to learn from experience than when the members do not feel safe". In other words, the findings show that an interdepartmental knowledge sharing promoting culture is successful when leaders and colleagues, and formal mechanisms across departments are open for change and feedback, which is in accordance with the literature.

However, there are several examples given by the interviewees of how the lack of a knowledge sharing culture may impede knowledge transfer processes. In one hospital, a department found a superior way to organise their pre-operation patients, increasing the number of patients treated per day significantly. The innovation would be applicable for other surgery departments as well. However, the leader was reluctant towards initiating the transfer of the new procedure to other departments, as she assumed that they would dismiss the idea as an attempt of bragging. There was not a formal system for communicating the routine. As a result, the new procedure has not been transferred to other departments.

> *Never. It does not happen. Begrudgery is prevalent here. You should definitely not believe that you have achieved something.*

> *Chief surgeon 13, Department leader*

The example illustrates a point made by a significant part of those interviewed regarding the knowledge sharing culture. In many cases there seem to be a consistently, inherently, perception that a department would be regarded as bold and ignorant if it allowed itself to propose new ideas to other departments.

Asking for advice, on the other hand, seems to be viewed as an acknowledgement of someone's work. Thus, the findings show that there exists a culture which leaves little space for the proposal of new routines to other departments, and which, according to the interviewees, distorts knowledge transfer initiatives. Two reasons for why such culture characteristics exist between hospital departments and impede knowledge transfer are found in the qualitative data.

First, it is found that there exists a norm that one should have a rather profound insight into another department's operations before offering them advice or new solutions. If you defy this norm, and dare to suggest something new to a peer deportment, several interviewees both from an advising and receiving perspective, uttered that they would have viewed such an approach as arrogant and disrespectful, which obviously is a less popular description to obtain. Due to high specialisation, very few have detailed insight into other department's work. The interviewees expressed that as a result of this norm less knowledge transfer initiatives are successful. There is, however, no indications of the same result in literature.

Second, the interviewees suggest that part of the reason lies in the high degree of specialisation in each department. According to them, there seem to have occurred a sense of alienation between the different surgical departments, where every department is their own organisation, oriented towards themselves, and not the hospital as a whole, competing against each other over resources. This finding is in accordance with literature findings stating that team members are expected to compete instead of cooperate if they do not have a sense of group orientation towards each other (Glomseth et al., 2007; Argote et al., 2000). According to the evidence collected, such characteristics have led to lack of trust, freedom and personal initiative, resulting in a culture characterised by a sense of individualism. In the results, this notion is identified as an impediment to successful knowledge transfer processes by the interviewees. This finding is emphasised by Glomseth et al. (2007), who states that a team culture and knowledge sharing is impeded by individualism at the expense of group orientation. Argote (2013), supports this, arguing that when team members emphasise comparing their units' performance to other units rather than learning in their unit, they are less likely to learn from each others experience.

Summary

It is found that in departments characterised by a high share of acute surgeries, the environment is continuously destabilised as a consequence of interruptions. According to the interviewees this leads to a reduction in formal and informal spaces for knowledge transfer. This finding is partially supported by Argote et al. (2000), who at one hand argue that a destabilised environment characterised by interruptions may lead to the decay of knowledge. At the same time, it is pointed out that interruptions in production may provide opportunities for knowledge transfer (Argote, 2013).

In the interviews it has been expressed that interdepartmental knowledge sharing culture is promoted when leaders and colleagues appreciate improvement proposals and encourage employees and peer departments to share their innovations if successful. This finding is in accordance with the literature, see Howell and Annansingh (2013); Cummings and Teng (2003); Argote (2013); Howell and Annansingh (2013); Glomseth et al. (2007). However, the results also disclose that there are cultural mechanisms like begrudgery which negatively influence a sharing culture. According to the data collected, such mechanisms make the employees reluctant in wanting to share knowledge in fear of appearing as "know-it-all"-persons.

4.7.3 *Physical distance*

The property *physical distance*, defined as "the degree of physical distance between entities which the knowledge is shared across" by Yu et al. (2013).

It should be noted that the physical location of the hospitals in terms distance from the city centre and demographic variables have not been investigated in this study. Thus, the possible influences of such factors on knowledge transfer processes are not evaluated.

As explained in earlier sections, having informal arenas where people meet on a regular basis are seen as a fundamental prerequisite for solving issues and staying up to date on each other's tasks and methodologies. Several interviewees, both doctors and nurses alike, mentioned the importance of shared lunch spaces where they can discuss new improvements and innovations with colleagues within different professional specialisations. At a large Norwegian hospital they created canteens and lunch areas at the different departments instead of shared ones.

A majority of the professionals interviewed at that hospital stated that this alteration has directly restricted knowledge transfer because they were physically separated. Here is the voice of a department leader at the given hospital:

> *The canteen is an informal arena that should not be underrated. Here we meet and talk about what others are doing and working with. Now, after we got decentralised canteens there has been less of this, because everyone eat in their own canteen and we do not meet anymore.*

> *Chief surgeon 7, Department leader*

Naturally, the physical distance is found to be lower at smaller hospitals. The interviewees stated that as people meet more often there, and that they most likely have a higher level of interaction between departments than larger hospitals. Physical distance is accordingly argued to be less relevant at these hospitals. In addition, it seems that at the smaller hospitals departments often share resources such as operating rooms, instead of having their own at separate locations. One surgeon with experience from several Norwegian hospitals, both small and large, believes it is easier to cooperate and transfer practises between departments at smaller hospitals. He further emphasised that it is easier to keep control of who are in different roles at the smaller hospitals, once again as people interact more freely.

At every hospital part of the research it appeared that one or more departments were more or less isolated from the others. A nurse with educational responsibilities said the following when asked to elaborate on her view as to why some departments would become isolated:

> *I really think it is about the fact that we are so separated in space. In a way we have become totally lost for each other. What might help in enlightening these things [good ideas and best practises] is people working together while on duty. If we had more of a sense of community in some kind of forum it could possibly help in sharing experiences and some good ideas.*

> *Nurse 9*

There were no other common features to these departments than that they were physically located in a manner that lead

to low interaction with organisational members from other departments, e.g. they were in their own buildings.

Summary
The physical and interior design of the hospital is seen to have an effect on the success of knowledge transfer processes. There are found major differences in whether the hospitals part in this study have been designed, and practitioners especially enlighten the effect it has on either providing for or restricting interaction between departments and professions. This is further an element in maintaining control of social relationships and knowing who to contact with specific matters. At all of the hospitals there are found examples of departments who are more or less isolated from interaction with others, and the physical location is found to play a vital role.

4.7.4 *Resources*

Resources such as time, financial means, and locations in terms of meeting rooms and bed areas, are properties that have been identified as of a great significance when it comes to knowledge transfer by actors from all levels of the organisational hierarchy. In addition, there are several occurrences where professionals emphasise the value of having well-functioning technology and ICT solutions in the collected data. Thus, findings regarding both time, personnel, financial means, and ICT solutions are presented in the following.

Personnel, time and financial means
According to the interviewees, the lack of resources has two opposite effects on the knowledge transfer process:

On one hand, the lack of resources has been found to have a rather encouraging influence on the actors in the knowledge transfer process. That is, if a department experienced that they actually were in lack of resources to the extent that they were not able to fulfil their duties in a decent manner, they would seek to find new ways to continue working at the same standards, but more resource efficient. In this way, the lack of resources can encourage the gathering of information and knowledge from other departments, according to the interviews. This finding, however, is not confirmed or disproved in the literature.

Since 2006 when the director started to tighten the budget, the economy has been the driving force behind the change in the patient care (...) There were enormous budget cuts. We had to find other, more clever ways to work.

Chief surgeon 13, Department leader

On the other hand, the lack of resources such as time, personnel and money are referred to as major barriers for being able to transfer knowledge in a majority of the interviews. These findings are in accordance with those of Greenhalgh et al. (2004); Argote (2013). Greenhalgh et al. (2004) argue that successful implementation of new knowledge in an organisation depends on the motivation, capacity, and competence of individual practitioners. In addition, they emphasise that if there is dedicated and ongoing funding for its implementation, the innovation is more likely to be adopted. This corresponds to the results of this study.

Leaders interviewed explained that the overall lack of resources seem to cause departments to hesitate to share knowledge, because they know that certain changes in one department may cause reallocation in the workload. As a consequence, they may have to keep patients longer within their departments, which again leads to extra work for them. In addition, the extra workload as a result of transferring and implementing knowledge, may in the beginning demand time and resources in order to follow up on the new initiative. In this way, implementing change is seen as a time demanding burden in the short term rather than a contribution in the long term, according to the interviewees.

The most important thing is that you have the time to think. To not have the day filled with activities so that when the day is over, the only thing you want and need is to go home and leave the hospital behind. That the pace is manageable, and that we have a decent number of employees relative to the work tasks. That is what I think is the most important.

Chief surgeon 2, Professor

The interviewees in managerial positions expressed that short term financial pressure makes it difficult to prioritise to spend

time, personnel and money on organisational knowledge building activities, such as knowledge transfer between departments, which would have been beneficial in a long term perspective. As a consequence, several departments seem to have a known and an unknown potential in improving their daily operations, but they are not actively pursuing to implement new routines in order to release these potentials.

ICT solutions

In literature *Shared network(s) of information and knowledge-based artifact network*, or more specifically, ICT solutions, are classified as "The existence of networks and aids that help transfer knowledge within the organisation"(Usoro and Majewski, 2011).

In the collected data there are several occurrences where professionals emphasised the value of having well-functioning technology and ICT solutions present in order to arrange for optimal knowledge transfer. Transfer of knowledge associated with medical technology such as new medical equipment is apparently not an issue, so technology in this regard narrows down to ICT and other communication solutions.

In a health care environment there is a strong focus on documentation, obviously on medical treatment, but also on processes. There is therefore a need for user-friendly and intuitive ways to store data for documentation. Nevertheless, the ICT solutions are brought forward time after time by practitioners as a severe restriction on knowledge sharing. The main impediment is apparently that the current solutions are too complex for efficient use, so that many do not bother to use them for anything else than the minimum they are obliged to do.

> *I believe the most important [for knowledge transfer] is a well-functioning computer system. It sounds quite trivial, but it has be to easy to use, and help must also be easily available (...) My impression is that a lot stops due to such easy things.*
>
> *Chief surgeon 7, Department leader*

Complex ICT solutions are not necessarily the only reason for practitioners' frustration, many also point to lack of appropriate training with the systems and say that there is a problem that qualified help is not available when they need it. One example was two surgical departments at two different hospitals that

tried to arrange a video conference, but were not able to effectuate the task. Organisational members themselves said that this is below what should be expected in 2015. This is an example of practitioners' lack of *artifact network know-how and skill*, defined as when "A participant has knowledge in how to use an artifact network for efficient knowledge transfer" (Salleh et al., 2011).

The lack of training and understanding in the systems are further understood to be demotivating for the users. In literature *Artifact network self-efficacy* is defined as "Belief in one's capabilities to organise and execute knowledge sharing" (Tsai and Cheng, 2010). At one hospital they used a computer-based error reporting system, and one manager described this as a "black hole". She did not know whether anything happened to her reports, as she never received any feedback, and she did not have the motivation to investigate the reason for this error, as she did not have the proper training. There are several such examples of use of ICT systems where the users have not received the proper training, and there for resigns if anything does not work as expected.

Summary

Knowledge sharing initiatives are found to be abandoned if they are not prioritised in shape of time and adequate personnel. The interviewees give demotivated and overworked employees as a reason. However, some of the findings also show that the lack of resources facilitate knowledge transfer as employees are forced to find new ways to work in order to keep up with industry standards. This finding is partially in accordance with the literature.

In modern health care organisations ICT systems are crucial aids at all levels. In terms of knowledge transfer ICT systems are in particular used for documentation and educational purposes. In many instances the ICT tools are found to be so complex that health care professionals are not able to utilise them efficiently. Practitioners point to both cumbersome systems and lack of training as important reasons.

Part IV

DISCUSSION AND CONCLUSION

DISCUSSION

The following discussion will concern the two main contributions for theory in this study; the Knowledge transfer model (KTM) with properties influencing knowledge transfer, and the understanding of how these properties influence how knowledge is transferred successfully or unsuccessfully in Norwegian public hospitals.

5.1 THE KNOWLEDGE TRANSFER MODEL

This study has sought to investigate how process-related knowledge is transferred successfully or unsuccessfully between surgical departments in Norwegian public hospitals.

In order to do so, a conceptual framework for the properties influencing the knowledge transfer process in knowledge-intensive organisations was needed.

There was one main reason for this. The existing conceptual frameworks either did not apply to knowledge-intensive organisations in general, or did not entail the properties of the relations between the actors, which were identified as highly important through the literature review, as presented in Chapter 3.1.3.

The framework aims at being applicable for knowledge-intensive organisations in general, as the relevant existing models for knowledge transfer are based on knowledge-intensive organisations, of which the KTM can be viewed as an extension. Hospitals are, by definition, considered to be knowledge-intensive organisations, as explained in Chapter 2.4. Hence, it is assumed that a model relevant for knowledge-intensive organisations will be relevant for hospitals as well.

As a result, the KTM, presented in Figure 11, was proposed as a conceptual framework for knowledge transfer in knowledge-intensive organisations. This has led to one main contribution to theory regarding conceptual frameworks for knowledge transfer processes in Norwegian public hospitals, which will be discussed in the following.
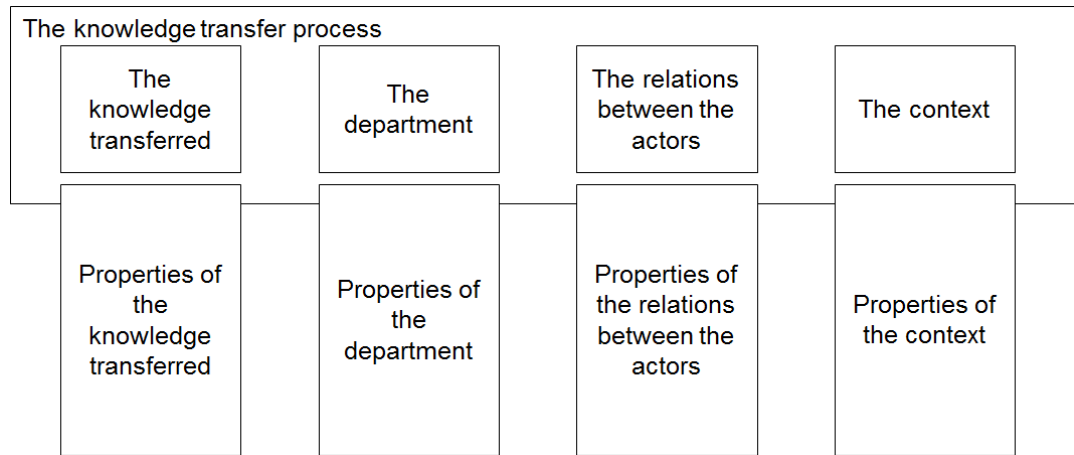
The knowledge transfer process			
The knowledge transferred	The department	The relations between the actors	The context
Properties of the knowledge transferred	Properties of the department	Properties of the relations between the actors	Properties of the context

Figure 11: The Knowledge transfer model

5.1.1 *Appropriateness*

It is reasonable to question the appropriateness of creating a generalised model like the KTM. The issue which is regarded as most interesting, and therefor addressed in particular is; to which degree is the KTM applicable to hospitals as knowledge-intensive organisations?

Knowledge-intensive organisations are indeed specialised and peculiar entities. With knowledge often being the foundation for their eventual competitive advantage, they invest heavily in and often create proprietary methods for knowledge transfer and knowledge sharing tactics. Knowledge transfer is disposed to characteristics of the knowledge to be transferred, the individual actors, the relationship among them and the organisational context. As a consequence, the ideal knowledge transfer process differs greatly from firm to firm, and industry to industry, as the presence of properties within these categories will be unique for each situation. Nevertheless, all properties in all four categories were identified in the data collected from the hospitals in this study. A majority of the properties where identified through research within other knowledge-intensive industries, as explained in Chapter 3.1.3. This implies that there are some properties that are not industry specific and can be applied to knowledge-intensive organisations in general, and hospitals in particular. In addition to those properties described in Chapter 4, some of these are *power games*, *casual ambiguity*, and *dependence*. Further properties are to be found in Table 7 in Appendix B. The fact that a considerable amount of the properties are shown to have a general applicability enhance the ap-

propriateness of the proposed model to hospitals as knowledge-intensive organisations. In spite of this it is important to notice that not all attributes have to be present for the success of knowledge transfer or to motivate employees to partake in knowledge sharing. This is seen as an important premise for the use of the model, as it clearly will have to be adopted to fit with the individual hospital's needs.

To the authors' understanding the model is able to describe successful or unsuccessful knowledge transfer processes generalised for knowledge-intensive contexts in a good way, and should therefore be considered as appropriate for its use, also for hospitals in particular.

5.1.2   *Criticism of the KTM*

Above there has been shown arguments favouring the introduction of the KTM. However, this model should also be interpreted with a critical view. There are two conditions that may limit the applicability of the model, and those are regarding the structure and industry specificity.

Structure
First and foremost, the sectioning of properties could be seen as too general, as the model consists of only four distinctive categories. This may cause the loss of important information, which in turn would limit the theoretical and practical applicability of the model. An example of this is the choice to only have one category covering individual properties. The major distinction from Szulanski (1996)'s framework is that the KTM has merged the sender and receiver roles of the knowledge transfer process. In Chapter 2.2, knowledge transfer was defined as dyadic exchanges of knowledge, a process where the origin unit and the destination unit have specific tasks in order to make a knowledge transfer successful. Hence, it could be argued that the merger of the sender and receiver role is problematic, and that there should have been one category for properties of the sender, and one category for properties of the receiver. This notion is supported by the empirical findings, in which some of the properties identified relate to only one out of the two roles, or have distinct differences when being applied to either a sender or recipient of knowledge. In addition, some of the properties identified in the study overlap with others, resulting in that some properties are grouped within other properties,

within the same category. In this way, the model proves not to be mutually exclusive and collectively exhaustive. Hence, the theoretical and practical applicability may be weakened. On the opposite, including numerous small categories capturing the nuances of all properties would result in a bewildering framework, confusing the reader. This would undermine the purpose of creating a structured model, and severely impede its applicability as well.

Industry specificity
Secondly, an important limitation of the model is the varying degree of generalisation in terms of industry specificity. Some of the properties identified have a lower degree of generalisation, e.g. by being more directed towards specific industries, and do therefore not apply to all knowledge-intensive organisations or industries. This variety in degree of generalisation of the properties is explained by the diversity in terminology across the broad range of literature that has been covered within the field of knowledge transfer in knowledge-intensive organisations. Because the terminology differed, it is likely to assume that there have occurred different interpretations of the term "knowledge-intensive", thus the cases across the literature may have varied in degree of generalisation as well. As a consequence, some of the the properties identified in the articles may be more industry- and case-specific than others, and therefore may not apply to all knowledge-intensive organisations.

5.2 SUCCESSFUL AND UNSUCCESSFUL KNOWLEDGE TRANSFER

Through the study it has been found that process-related knowledge transfer processes in many cases are conducted deliberately or unintentionally between departments, and often without the assistance of formal systems. As a consequence, there seem to exist little knowledge on how knowledge transfer processes are actually conducted with or without success. The main contribution of this study is that it increases the understanding of how knowledge is transferred successfully or unsuccessfully between departments within Norwegian public hospitals. The following two sections will present the main implications for theory regarding the research question (RQ), presented in Table 1. The findings will be discussed with respect to whether they contribute to a successful or unsuccessful knowledge transfer

process, as presented in Figure 12. The discussion is concluded by 13 propositions.
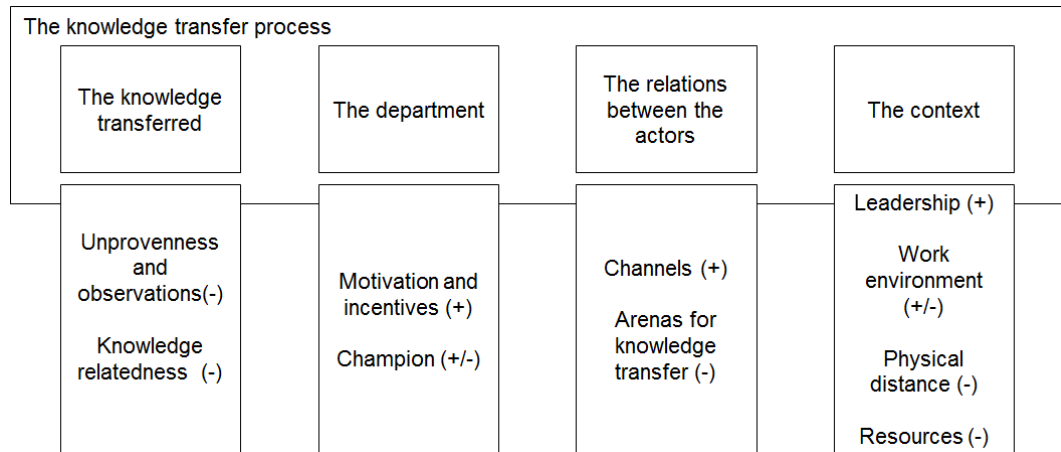
Figure 12: The Knowledge transfer model

5.2.1 *Successful knowledge transfer processes*

In terms of the RQ and how knowledge transfer processes are conducted successfully, several interesting implications for theory was found. The areas that were found to mostly facilitate knowledge transfer between surgical departments will be presented in the following.

Motivation and incentives
One contribution to theory is the clarification of how Norwegian health care professionals are motivated to participate in knowledge transfer. Furthermore, the study has sought to create an understanding of the incentives present in the organisations.

It is found that the premises for extrinsic motivation are hardly attainable in Norwegian public hospitals. Managers have very few possibilities to reward desired behaviour in monetary terms. However, this is not necessary, as most health care personnel express mainly intrinsic and altruistic motivational factors as supported by Harvey (2012). Practitioners desire a sense of accomplishment or appreciation as outcomes from participating in knowledge transfer, which they get when better processes lead to improved patient care. Willem and Buelens (2007) found that intrinsic motivation was a facilitator for knowledge sharing, and Wu (2013) that personnel motivated mainly by extrinsic

factors were less willing to engage in knowledge sharing. Thus, motivational factors for health care workers in the investigated hospitals should be suitable and encourage people to partake in knowledge transfer processes.

On the other hand motivational factors are found to be personal and difficult to control. Consequently, there will be situations where managers will have to handle people with motivations that are not aligned with the rest of the organisation, such as demotivated personnel, conservatives, or people with other agendas. In such situations, it could be beneficial to have some methods for encouraging extrinsic motivation in order to motivate subordinates. As managers today have few methods to keep down their opposition, these few people may impact severely on the outcome of knowledge transfer.

Building on the lack of means for providing extrinsic motivation, it is further found that there are few incentives for participating in knowledge transfer in Norwegian public hospitals. Willem and Buelens (2007) found that the presence of incentives for knowledge sharing not only lead to more knowledge sharing, but also to higher organisational identification and trust. As a consequence, the apparent absence of incentives may lead to mistrust towards the organisations. Further, it seems like incentives are to some extent misaligned between hospitals and their employees. The hospitals are rewarded monetarily via the activity based funding scheme for each surgical intervention, whereas practitioners are rewarded by appreciation and gratefulness associated with treating patients. The theoretical argument is that intrinsic motivation trump extrinsic motivation. It is logical to assume that most surgeons would work overtime if that could help save the life of a cancer patient, but not to expect that they would do so every day. Arguably the intrinsic motivation would be worn thin in time.

Conclusively the following proposition is formulated:

> **P1:** Intrinsic motivational factors are more important that extrinsic motivational factors in engaging health care professionals in knowledge transfer processes.

Champion
This study has one implication for theory regarding change agents.

Champions as change agents are found to facilitate knowledge transfer initiatives. According to the results, their integrity makes their colleagues trust in the change initiatives, even though the proposed methods means replacing long-cherished procedures. In this way, the champion seems to create a sense of ownership towards new processes. Hence, the results indicate that it is the integrity and social status of the champion in particular which enables them to enhance knowledge transfer initiatives. This is in line with what is found in the literature, where Karl E. Weick (1999); Julie Battilana (2013) state that it is the informal status which give the change agent the power to influence. However, the findings also show that that in cases where the champions cannot follow up on the transfer initiative over time, the transfer process often fail, as the champions represent an irreplaceable driving force.

Conclusively, change agents are of a significant value in the adopting phase in the knowledge transfer process, encouraging to an active and open culture in the integration of new routines and procedures. However, the findings indicate that champions need to have the opportunity to follow up on the implementation of the knowledge in order for them to have a real influence. There are not found any contradicting proof in in the literature. On the contrary, several researchers support the finding, and emphasise the importance of change agent's long-time efforts in successful knowledge transfer processes, such as Greenhalgh et al. (2004); Karl E. Weick (1999); Julie Battilana (2013); Nevis (1995).

Hence, the following propositions is posed:

P2: If champions as change agents contribute to the knowledge transfer processes over time, they are important facilitators of knowledge transfer processes between surgical departments in Norwegian public hospitals.

Channels

In relation to communication channels, this study has one implication for theory in revealing how informal channels are prioritised above formal channels regarding knowledge transfer in Norwegian public hospitals. Brown and Duguid (2001) support

this, and argues that knowledge-intensive work is normally conducted outside the formal procedures in the organisation.

An emphasis is placed on the importance of social relationships among the professionals. The findings show that it is essential that practitioners know each other and interact outside the formal arenas in the organisation. The rationale behind this is that they need to have an understanding of on how the various departments are doing things differently in order to identify candidate procedures and practises for transfer. In this way social ties, both weak and strong, are crucial. Weak ties serve as bridges among departments, and strong ties are effective for initiating search for improvements. Thus, the presence of weak ties in this context should not be underestimated; without them the hospital would consist of disjoint subgroups, inhibiting the widespread diffusion of knowledge. In the literature, strong social ties are also found to be important, as they are most effective for initiating actual search for information in the organisation (Brown and Duguid, 2001).

Conclusively, the results indicate that informal channels such as social ties are crucial for knowledge transfer processes. Further, the results accentuate the importance of the ability to create and maintain social relationships across departments and even hospitals. As a result, informal channels are found to be highly important for successfully transferring knowledge about process-related improvements.

Thus, the following proposition is posed:

P3: Informal channels are highly effective in transferring process-related knowledge, hence functioning as facilitators of the knowledge transfer process.

Leadership

Regarding the leadership roles on knowledge transfer, this study provides one main implication.

The leadership role has been found to rely on especially one important attribute; the ability to create an understanding of the importance of sharing and adopting new routines and new knowledge. The finding indicates that if employees are enlightened and thus empowered, they are more likely to commit to the knowledge transfer process. As a consequence, leaders who

include their employees, and empower them in the knowledge sharing process, may facilitate the knowledge transfer process. This finding is supported by the existing literature, where researchers emphasise that leaders, by exhibiting transformational leadership and by building high-quality leader-member exchanges, fulfil an important role in the development of employee relational identification and organisational identification which, in turn, leads to increased knowledge sharing in the firm (Carmeli et al., 2011; Han et al., 2010; Kotter, 2007).

The finding leads to the following proposition:

> **P4:** Leaders who establish a common understanding among subordinates of why knowledge has to be transferred and adopted, are likely to facilitate knowledge transfer processes.

Work environment

One of this study's implications to theory concerns the work environment, and in particular the culture in the departments between which the knowledge is to be transferred.

Several researchers, particularly Howell and Annansingh (2013); Cummings and Teng (2003); Argote (2013); Howell and Annansingh (2013); Glomseth et al. (2007), emphasise that knowledge transfer processes are more likely to succeed if the culture of the work environment is open, and there is a high level of acceptance for constructive criticism and innovative thinking, . The findings of this study correspond to the findings in the literature, indicating that an interdepartmental knowledge sharing culture is promoted when leaders and colleges appreciate improvement proposals and encourage employees and peer departments to share their innovations if successful. However, the results suggest that there are cultural mechanisms in hospitals, in particular begrudgery, which decreases peoples courage and willingness to share, and hence impede the knowledge transfer between departments today. This finding does not occur in the literature investigated. A possible reason is that begrudgery might have a stronger traditional stance in the Norwegian organisational culture than elsewhere, resulting in fewer theoretical results on the topic.

As a result, the finding can be regarded as a considerable contribution to theory, and the following proposition is presented:

P5:   The existence of negative cultural mechanisms such as begrudgery discourage knowledge sharing behaviour among employees, and hence impedes knowledge transfer processes between departments.

5.2.2   *Unsuccessful knowledge transfer processes*

In terms of the RQ and how knowledge transfer processes are conducted unsuccessfully, several interesting implications for theory was found. Those areas that were found to mostly impede knowledge transfer between surgical departments will be presented in the following.

Unprovenness and observation
One implication for theory regarding unprovenness and observation and its effect on knowledge transfer processes has been provided.

Empirical findings show that there are strict evidentiary requirements for improvements in health care. This means that new processes have to be proved beneficial or well-functioning in order to be accepted by professionals. On one hand, this ensures the quality of procedures that are actually implemented. On the other hand, the strict demands are also found to have a negative implication for knowledge transfer processes.

The strict evidentiary requirements can make it challenging to get acceptance to try ideas that have not been tested before. Especially for bottom-up initiatives where the strict requirements may mark an idea as unqualified even before it gets a change to prove its worth. As a result, one can expect less new initiatives to be lifted to managerial levels, particularly by personnel at the lower levels of the hierarchy who have limited time to find evidence in scientific literature or in their professional network. The view is supported by Rogers (1983), who found that it is more difficult to induce potential recipients to engage in a transfer without a proven track record of successful implementations.

According to practitioners, observation is an effective means for ensuring proofs of new routines. Observation across hospitals is found to occur regularly, contributing to the exchange of knowledge between departments of the same surgical discipline. However, there seems to be a lack of observation of new routines across departments. This is found to have neg-

ative influence on the knowledge transfer process. More specifically, the lack of observation between departments can lead to negligence of potentially beneficial routines in neighbour departments. Consequently, it will be hard to realise that the knowledge of other departments can be valuable for oneself, and thus, knowledge transfer initiatives will most likely appear as less attractive.

Conclusively the following proposition is presented:

P6: The strict evidentiary requirements of professionals may severely impede the knowledge transfer process.

Knowledge relatedness

In terms of lack of knowledge relatedness, one implication to theory is provided by this study. The results indicate that lack of knowledge relatedness is an important impediment for knowledge transfer between the different surgical departments. The results indicate that the departments do not seem to realise the knowledge sharing potential in a process related context as long as they cannot share knowledge in a medical setting. Thus, the implication of this study is that lack of knowledge relatedness seems to create a sense of alienation between two potential transferring units, distorting knowledge sharing activities, which leads to unsuccessful knowledge transfer. Michailova and Gupta (2005) reinforce this view, and proposes that when the nature of competencies and knowledge differs severely from unit to unit, there will be a challenge to perform effective knowledge sharing (Michailova and Gupta, 2005).

According to Ditillo (2012); Szulanski (1996); Park and Lee (2014), units with related competences are more likely to transfer knowledge to each other as the similarity of goals motivates the sharing of knowledge in collaborative and knowledge-intensive relationships. The results confirm this, as it has become evident that a significant effort is put into learning from other surgical equivalent departments within the country or abroad. Nevertheless, the results indicate that there is a clear tradition for neither not seeking advice nor transferring knowledge to departments within other surgical disciplines, as one does not not seem to believe that departments with another

medical specialisation can contribute to organisational matters. Conclusively, the lack of knowledge relatedness of the departments with the potential of sharing knowledge is found to have a high negative impact on the success of knowledge transfer processes.

This finding leads to the following proposition:

> **P7:** Unrelatedness in terms of medical knowledge creates a perception of unrelatedness regarding process-related knowledge, which impedes the knowledge transfer process between surgical departments.

Champion

The study provides one implication to theory in terms of champions as conservatives. As a contrast to change agents, the conservatives seem to have a severely negative impact on the success of knowledge transfer. The results indicate that changes may lead to resistance among conservatives, as they fear that the power position is threatened. Consequently, they are found to be likely to use their integrity to influence their colleges in a negative manner. This result implicates that conservatives may distort effective knowledge transfer processes by sabotaging knowledge transfer initiatives, and by influencing otherwise neutral parties involved in the knowledge transfer processes. This implication has not been made directly in the other literature investigated, but the arguments are in line with those by Mauborgne and Reneé (2003); Greenhalgh et al. (2004).

Hence, the following proposition is posed:

> **P8:** Conservatives may distort effective knowledge transfer processes by sabotaging knowledge transfer initiatives, and by influencing otherwise neutral parties.

Arenas for knowledge transfer

This study has one implication for theory concerning the arenas for knowledge transfer.

Throughout the study there has been identified a variety of arenas where health care professionals meet others from different departments and exchange knowledge. These are formal arenas such as multidisciplinary meetings, and informal arenas such as lunch breaks. However, there is a strong tendency in the findings that the existing formal knowledge transfer arenas first and foremost facilitate the sharing of medical knowledge. As a result, informal exchange arenas such as lunches and personal meetings are the preferred methods of knowledge transfer for process-related knowledge. This has several implications for the knowledge transfer processes between departments.

First, the evident lack of formal arenas for planned knowledge transfer seem to make the employees prefer to use informal arenas if they want to initiate transfer new procedures to other departments. As a consequence, knowledge transfer initiatives often takes form as occasional informal exchanges of knowledge. This indicate that the knowledge transfer processes are hard to formalise, codify and measure. Consequently, it is challenging to know the exact effect of the knowledge transfer process. In addition, if the transfer process proves to be successful, the tacit nature of the knowledge transfer process may make it hard to systematise and thus spread to other departments. This finding is confirmed in the literature by Nonaka (1991), who argues that tacit knowledge is hard to formalise, and therefore difficult to communicate to others.

Secondly, the informal knowledge transfer tradition can make it difficult for all employees to actively participate in the knowledge transfer process, even if they want. This is as participation requires that they actually know that the informal arenas exist. Consequently, important knowledge transfer initiatives may crumble in the minds of potential knowledge sharing contributors if they are not a part of such informal arenas. In this way, the informal knowledge exchange may impede the knowledge transfer process as well.

However, it has become apparent that the informal knowledge transfer arenas also may lower the threshold of contributing to a knowledge transfer process. A reason may be that one does not have to use cumbersome bureaucratic systems to transfer knowledge, which, as it appears from the findings, in some instance erodes the knowledge sharing initiatives. Allen et al. (2007) agree with this point, and argue that ideal of well-diffused knowledge is particularly threatened by the tendency of organisational boundaries, such as those between depart-

ments, which may result in the formation of what they term 'islands of knowledge' within the firm. This point is emphasised by Brown and Duguid (2001) who highlight that knowledge-intensive work is generally conducted in a manner removed from that prescribed by organisational charts and formal procedures, and can therefore be threatened by strict adherence to such structures.

Conclusively, the informal arenas may lower the threshold for initiating knowledge transfer, contributing to active knowledge sharing behaviour between departments. On the other hand, the unsystematic transfer of knowledge can make it challenging to systematise and scale knowledge transfer efforts, in addition to participate in the knowledge transfer processes. As a result, the knowledge transfer processes between departments may be impeded.

Hence, the following proposition is formulated:

> **P9:**   The absence of formal arenas where practitioners can share experiences and ideas for successful knowledge transfer in Norwegian public hospitals may impede knowledge transfer processes.

Work environment

This study provides one implication for theory regarding the work environment in terms of environmental stability of a surgery departments. The findings indicate that whether there is any room for informal knowledge exchange depends on the stability of the work environment. Thus, the study suggests that hospitals with a high degree of acute surgery are at the risk of missing knowledge transferred through informal channels.

From the results, it seems that if the environment is continuously destabilised as a consequence of acute surgery, formal and informal spaces for knowledge disappears. More specifically, the findings indicate that both time and arenas for knowledge transfer are reduced under such circumstances. As a result, surgeons and nurses have little or no control over their own time, and thus cannot plan knowledge sharing activities. Hence, informal and formal knowledge transfer processes may be impeded. This finding is partially supported by Argote (2013), who at one hand argues that a destabilised environment characterised by interruptions may lead to the decay of knowledge.

At the same time, it is pointed out that interruptions in production may provide opportunities for knowledge transfer (Argote, 2013).

In departments with a high degree of elective surgery, the results indicate that the employees have more time to discuss routines and work tasks, as the time available is more predictable and allocatable. In this way, a high degree of elective surgery may facilitate the interdepartmental knowledge transfer. However, there is no evidence that an increased amount of time between the operations contributes directly to successful knowledge transfer between the departments. This finding is neither confirmed, nor disproved in the literature investigated.

Thus, the following proposition is stated:

> **P10:** Lack of environmental stability as a result of acute surgery, reduces spaces for formal and informal knowledge exchange, and thus, impedes knowledge transfer processes.

Physical distance

A contribution of the study is the early understanding of how the physical design of the hospital affect success or failure of knowledge transfer processes.

The physical location within the hospital and distance between departments have been found to play a significant role in knowledge transfer. These aspects, summarised as the design of the hospital, govern how often people meet and also how they interact in their day-to-day activities. When people work closely together and cooperate, they often build a mutual understanding of cooperative norms, each other's competences, and responsibilities. In this way, they also know what to expect from each other. Hence, good opportunities for cooperation and knowledge transfer between departments materialise.

It is found that at the smaller hospitals it is easier for employees to maintain social relationships with employees at the different departments. This is in contradiction with Yu et al. (2013), who argues that a short distance is sometimes not advantageous for individuals to share knowledge. Practitioners argued that physical distance were of less importance at these hospitals, as there is less rotation of personnel, and that they meet others from different departments more often. As they

meet more often, practitioners also become faster updated on changes in peoples' tasks and responsibilities. Additionally it seems like the practitioners perceive the barriers for knowledge transfer to be lower at smaller hospitals opposed to larger ones. If they actually do interpret the barriers to be lower, they should be expected to be more willing to conduct in knowledge transfer activities.

At all hospitals part in the research there were identified departments that were perceived to be more or less isolated in terms of interaction with other departments. It may be hard to avoid a physical building structure where no departments eventually end up being located more or less away from the core of the hospital. This may be especially valid for departments whose medical field is limited and does not require much cooperation with other departments, cooperating departments seem to be placed closer to each other. As it should be possible to avoid such an isolation by taking corrective measures, it can be argued that it is the perceived distance and not the actual, physical distance that creates the perception of isolation.

The conclusion regarding physical distance in this study is opposite that of Yu et al. (2013). As a result, the finding can be regarded as an interesting contribution to theory, and the following proposition is presented:

P11: The physical distance between surgical departments establish a perception of alienation and isolation from other peer departments, which impede knowledge transfer with these departments.

Resources

Two implications are provided in this study regarding resources.

The first implication concerns the lack of resources such as time, money, and personnel. On one hand, the resource deficit is found to enforce the creation of new and more efficient ways to work, implying that situations of high economic pressure cause the departments to look to others for inspiration, boosting the knowledge transfer between departments.

However, even though some data points in this direction, there is a strong tendency in the findings that indicates that the lack of knowledge first and foremost makes knowledge

transfer challenging. The reason seems to be that high short term economic pressure and personnel deficit make it hard for employees to prioritise knowledge transfer activities. Employees seem to feel that it would be to steal time from the patient if one used it on extraordinary activities. This perception is evident, even though the employees know that the knowledge transfer activities would be beneficial for the patient in the long term.

Hence, the results of this study show that lack of resources seem to cause passivity regarding knowledge transfer, which again leads to unsuccessful knowledge transfer initiatives. The same finding appears in the literature, where it is stated that if new activities, such as knowledge transfer activities, start out with a budget and if the allocation of resources is both adequate and continuing, it is more likely to be assimilated (Greenhalgh et al., 2004; Argote, 2013).

The second implication concerns ICT solutions in particular. ICT solutions are found to be useful tools facilitating the knowledge transfer process. However, they can also be viewed as severe barriers of knowledge transfer.

The results show how many practitioners seem to lack self-efficacy in using the available ICT solutions. Throughout the interviews, actors complain about ICT systems that are too complex to be utilised for their initial purpose and for their training and competence. It is also found that little investment is put into enhance the ICT skills of the employees. Consequently, many health care professionals seem to have an incorporated belief that ICT systems are complicated and cumbersome. Hence, they should not be expected to be positively minded towards them. Conclusively, this study indicates that the lack of ICT self-efficacy leads to that otherwise attainable knowledge transfer processes are impeded. This conclusion is supported by literature, where it is found that self-efficacy had a strong significant effect on knowledge-sharing behaviour (Tsai and Cheng, 2010).

Thus, the following two propositions are given:

P12: Lack of resources leads to the marginalisation of knowledge transfer initiatives, as the short term maintenance of patient treatment and financial goals are prioritised.

P13:   Complex ICT solutions and the practitioners'
lack of self-efficacy with them are found to im-
pede knowledge transfer in Norwegian public
hospitals.

5.3   IMPLICATIONS FOR HOSPITAL MANAGERS

Managers in knowledge-intensive organisations that want to
stimulate to enhanced knowledge transfer efficiency, presum-
ably also leading to improved overall results for the organisa-
tion, must be competent to take the best decisions related to
knowledge transfer activities. In order to improve their compet-
ence with knowledge transfer processes they must be aware of
the structure of these processes and the properties governing
knowledge transfer efficiency in their relevant context.

The first managerial implication of this study is the thorough
overview of the knowledge transfer process and the deduction
of the KTM, which entails an identification and classification of
the most relevant properties influencing the knowledge transfer
process in Norwegian public hospitals. The conceptual model
can be used as a tool that can aid managers on where they
should direct their managerial efforts. The results and discus-
sions derived from the RQ should help managers understand
key aspects and concepts of the knowledge transfer process in
their own context. For instance, this thesis strongly emphasises
the importance of focusing on prominent elements, such as
leadership roles and arenas, which are found to be of high
significance in order to achieve the potentially high gains of
knowledge transfer processes. As a result, managers could use
this overview as a foundation to identify challenges in own op-
erations, and could encourage subordinates to take a proactive
stance against eventual problems when building systems for
effective and efficient knowledge transfer.

The second implication for managers is the identification of
employees' lack of time and resources to commit in knowledge
transfer activities. This conclusion shows that managers must
prioritise knowledge transfer of process-related knowledge. Health
care workers already have packed schedules, and there are al-
ways important tasks they could engage in. As successful know-
ledge transfer in a hospital context is mostly concerned with the
transfer of tacit knowledge, it demands will and engagement
from both the recipient and sender of knowledge. A clear pri-
oritisation and valuation of knowledge transfer from top-level

management could undoubtedly enhance the acceptance for prioritising knowledge transfer activities.

Third, managers must ensure that their organisations' culture facilitate knowledge transfer. The results of this study have showed that hospital organisations need to have an open and tolerant culture in order to learn from their mistakes, continuously implement the best type of treatment, and continuously look for ways to improve. The promotion of such a learning culture can be viewed as a managerial responsibility. If managers do not engage in such culture, and if the right conditions and prioritisation are not put in place by management, one cannot expect the individual health care employee to initiate knowledge transfer. Consequently, the opportunity to provide treatments with optimal patient safety and quality, may fail.

Lastly, competence-based leadership has had a strong stance in health care, as in many other sectors (Eriksen-Deindoff et al., 2013). However, this *primus inter pares*, "first among equals", perspective on leadership may not always be beneficial in a knowledge-intensive context such as hospitals. It is not given that the best surgeon is equally good at understanding strategic implications, economic planning, or with relational management of its colleagues. Being brilliant in a medical profession is not necessarily the same as being a brilliant leader. Consequently, the department may end up with a leader that does not master its job, and additionally the professional community would been drained off a great professional. There is a trend towards accepting other professions into hospital management (Eriksen-Deindoff et al., 2013), even though it is essential to value and appreciate the essential medical knowledge and understanding. Furthermore, most health care professionals seem to have chosen to work in health care because they wanted to work with people and medicine, not because they wanted to become leaders. In this regard it is found that hospital management could benefit by employing staff with nontraditional backgrounds in order to complement and supplement the managerial skill set.

5.4 LIMITATIONS

The research methodology has five main limitations. The first limitation of this study of interdepartmental knowledge transfer in Norwegian public hospitals lies in the main data collection method, and particularly in the semi-structured interview

approach. The interview topics and questions used were thoroughly developed and evaluated. In addition they were posed in an open and non-leading manner in order to avoid biased and reflexive answers. This process was described in Chapter 3.2.2. However, the semi-structured approach implies that it is the interview object who decides on which topics the focus will be. As a result the interview may have been led in a certain direction, causing the interviewee to omit points of interest. As a consequence, important information may have been excluded from the interviews, and consequently from the results and conclusion of this study. Hence, the semi-structured nature may limit the results of the study.

The second limitation of the study is the generalisation of the results based on a limited sample. The data sample consisted of a significant number of interview objects, chosen based on objective selection criteria. Nevertheless, the choice of limiting the data collection to five hospitals may cause the data collected to be influenced by local biases and traditions, which make the results less generalisable. Further, the sample covered a broad range of professions and positions in order to capture the complex work in a surgical department. However, most of the interview objects talked about their own work, which might have resulted in a biased presentation of the data, either consciously or unconsciously, which may limit the reliability of the result.

Furthermore, the analysis of the data was coded in accordance with a specific coding technique presented in Chapter 3.3.3. Several actions were taken, such as the exchange and recoding of coded material, in order to ensure the reliability of the coded segments. However, there is a possibility that the coding and analysis are influenced by the subjective opinions and individual judgements of the authors. This may have led to inconsistencies in the results, and thus reduce the possibility of replication.

The fourth limitation lies in the identification and evaluation of articles in general and the properties influencing knowledge transfer in particular. The articles and the properties were identified and evaluated based on an objective selection criteria and the evaluation of the importance of each is based on the empirical findings in the articles reviewed. However, the the evaluation of the articles and the properties has been subject to the interpretation of more than one author. As a consequence, the review process might have been coloured by individual

judgements, resulting in an inconsistency in the evaluation of the importance of the articles and the properties.

The last limitation of this review is the limited applicability of the KTM. First, the model can be viewed as too general in terms of structure, as the categories deduced are not capturing all nuances of the different properties. In addition, some of the properties identified are more industry specific than others as a consequence of the varying level of industry specificity among the articles reviewed. Hence, the properties and thus the model do not apply to all knowledge-intensive organisations. As a conclusion, a verification of the KTM is needed. The verification may be a possible base for a future theory building research. In view of practical implications, managers trying to use the model uncritically as a tool in order to enhance knowledge transfer processes, may not find all properties suitable for his or her organisation.

5.5 FUTURE RESEARCH

There are several opportunities for future research on the area of knowledge transfer in Norwegian public hospitals, both within conceptual and empirical research methodologies.

This study suggests that increased focus on knowledge transfer between departments in Norwegian public hospitals could have a potentially high gain in terms of improving organisational processes and routines, and thereby efficiency of patient care. Accordingly, further study of knowledge transfer in Norwegian hospitals should be interesting, both from a theoretical and a managerial point of view.

Throughout this research the KTM, a conceptual model for knowledge-intensive industries general, has been applied and enhanced in a health care context. Applying the model in other knowledge-intensive industries, such as engineering or higher education, would be interesting in order to assess the applicability of the model. Furthermore the restriction of surgical departments could be removed, so that one could study knowledge transfer between all departments at Norwegian hospitals.

Some professionals argued and hypothesised during interviews that interdepartmental knowledge transfer should be more present at smaller hospitals opposed to larger ones. This was not a focus in this study, but highlighting this hypothesis could be another interesting addition to the academic field.

6

CONCLUSION

This study investigates how knowledge is transferred success-fully or unsuccessfully between surgical departments at Norwegian public hospitals. Simultaneously it seeks an understanding of important barriers and facilitators of such practice.

For theory, two main contributions were provided. First the Knowledge transfer model (KTM) was proposed for use in research of knowledge transfer in knowledge-intensive organisations.

Second, specific properties influencing the knowledge transfer process were identified, investigated, and found to have a variable level of prominence. This was done in order to better understand the different aspects of how knowledge transfer is conducted in Norwegian public hospitals. The findings have for instance shown that champions over time can contribute positively to knowledge transfer. On the contrary, physical distance and lack of knowledge relatedness can impede knowledge transfer, mainly as a result of their perceived influence. These contributions can be used as a base for further theory-building research in order to increase the understanding of knowledge transfer processes.

For management, the identification and classification of the different properties in the KTM provide a complete overview of the nature of knowledge transfers processes, and can therefore be viewed as a foundation for the understanding of sources of impeding and facilitating effects on knowledge transfer in knowledge-intensive organisations in general, and hospitals in particular. This understanding can be used as a as a tool in order to enhance knowledge processes in hospitals today.

The concluding statement of this study is that an enhanced focus on knowledge is transferred within hospitals will make it possible to release a significant productivity potential in the Norwegian public health care sector, resulting in an increased overall quality and efficiency of patient care.

Part V

APPENDIX

INTERVIEW GUIDE

The interview guide used in the interviews is presented below:

Description of the project:

Clarify with the interviewee: We have no interest of patient sensitive information. You and your hospital will be anonymised in the study We will only highlight the characteristics of the hospital. The interview will be recorded, but neither recording or transcription will be distributed to anyone other than us and our supervisor without your consent.

Working methods and procedures are emphasised in terms of improvement and knowledge flow. If factual knowledge (what the various professions know) are relevant for the flow of information, this can be included by the interviewee.

Point out that "you" implies the same subdivision. If all info about the entire surgical department of interest, this is pointed out that in question.

No questions are related to flow of knowledge within the department, only about work environment and improvement processes.

By "subdivision" means those under surgical department.

By "department" means the department of surgery.

By "departments" means all departments at the hospital.

Topic	Number	Question	Comment
Person	1	Name	(For follow-up contact information).
	2	Age	
	3	Position	
	4	Job experience	
Need for change	5	When we look at the procedural / process changes at your department in general, what are the drivers behind these?	Why are changes initiated?
	6	... where does the need come from?	Local, central, government, etc.
	7	... what proportion of the improvement processes are initated centrally?	
Knowledge sharing and cooperation	8	Do you usually collaborate effectively with other parts of the hospital in order to perform better?	Why?
	9	In your experience, when does knowledge sharing between the departments / divisions take place?	Eventually, why not?
	10	Is there a / several subdivisions / departments (at the rest of the hospital) or persons / roles you work closely with / are more related to?	Due to patient flow, knowledge or cooperation on improvement, etc.
	11	Are there any people / roles / subdivisions / departments initiating / who are pushing for knowledge sharing (with you) more often than others?	
	12	What is usually your role if you are exchanging experiences across subdivisions / departments?	
	13	Are you generally positive towards knowledge sharing across subdivisions/departments? Eventually, when are you not?	
	14	In your experience, what factors are most crucial for successful knowledge transfer between subdivisions/departments?	
	15	... and what are the largest barriers?	

	16	Do you have an example of an improvement that should have been shared, but that has not?	
Own change	17	How do others hear about what you have done?	
	18	... Have other departments / individuals / hospitals visited you and seen your results? (Who?)	
	19	Do you know if anyone else has tried to implement some of the same changes that you've found?	
	20	... What do you think prevented them to do the same as you?	
Inspiration	21	Which arenas do you use to get ideas and inspiration when it comes to improving your or your department's processes?	Either 17 or 18 afterwards.
	22	If you are searching for inspiration for improvement, do you go to other people, departments, centrally or to other hospitals?	
	23	.. Or are you of the opinion that someone else tells you about the most important improvement potentials through regular meetings arenas, so you do not need to see these yourself?	
Incentives	24	Are the individual professions responsible for ensuring that their work / their routines are best - is this is everyone's responsibility, or is it your responsibility?	Can be removed if it is universal.
	25	Do you have any perceptions on what incentives are valued the highest among employees when it comes to having the best possible practices and make best efforts?	

	26	... these incentives, to they most often lead to search (i.e. for knowledge / experience) outside the hospital's boundaries (i.e. internet, documents, conferences, other hospitals, etc), or promoting cooperation (i.e. knowledge sharing and exchange) between persons / entities?	
Boundaries and groups	27	Do you feel that there are personal groups in your department? (both subdivision and surgical department).	
	28	Compared to other places you've worked ...) how are the working environment and the importance of professional boundaries here at the hospital?	
Accept for knowledge sharing	29	Do you feel that it is possible / accepted to allocate time for knowledge sharing with regards to work processes? (Both of department and hospital) and are you doing this?	
	30	Does the hospital's central management invite for knowledge sharing?	
	31	... Is there a difference if you initiate this alone / together with other subdivisions / together with other departments at the hospital?	
	32	Do others (at the same subdivision) speak up if they believe that work or procedures could be improved? (/ some may be rejected if they are different (R)).	
	33	Synes du at ansatte på kirurgisk avdeling verdsetter og respekterer hverandres bidrag (mellom underavdelinger)? (/det er vanskelig å spørre andre om hjelp (R)).	
	34	... and what about the rest of the hospital?	

To contribute and to speak out	35	Does it happen that other people / departments / central managent point out weaknesses / elements that should be improved in your work or routines?	
	36	... Who could this be? (subdivision / department / person / role)	
	37	... is this ok?	
	38	Do you have a good understanding of working methods / processes at the other subdivisions?	Especially for doctors and nurses.
	39	... oarticularly good understanding of one or more subdivisions / someone? What?	Especially for large hospitals.
	40	Do you dare to speak up if you see that someone could have done something in a better way? (another subdivision / department, NOT within the same subdivision).	
	41	Do you find it easy to take up difficult issues and problems affecting several subdivisions? (especially with regards to working methods) (/ error is often used against the person in hindsight (R)).	
Type of knowledge	42	... What makes a change complex? Big change or inclusion of many employees / subdivisions?	
	43	How often does the department / division do complex changes?	
	44	... Can these new procedures bewritten down and distributed, or must it be showed how it should be done so that everyone in the department understands?	
Concluding questions	45	Do you think there is enough knowledge sharing with regards to working methods / processes in this hospital?	
	46	Is it better or worse in recent years?	
Thank you!	47	Anything you'd like to add?	

PROPERTIES FROM LITERATURE

On the following pages the properties identified as constituent parts of the Knowledge transfer model are presented. They are all identified in academic literature, and are presented alongside a descriptive definition, whether its presence has a positive or negative effect on knowledge transfer, and academic source.

Property	Definition	Effect on knowledge transfer	Source
Properties of the knowledge transferred			
Casual ambiguity	The precise reasons for success or failure in replicating knowledge are unknown, or the utility of knowledge is unclear.	-	Szulanski (1996)
Ease of knowledge access	How costly it is to find the information in terms of time and resources.	+	Watson and Hewett (2006)
Observation	The act of visiting other departments and/or medical institutions and investigate how they are operating there.	+	Nonaka (1991); Hamel (1991)
Relatedness	To which degree the knowledge of one unit is related or applicable to another unit's operations, goals and requirements.	+	Michailova and Gupta (2005); Ditillo (2012); Park and Lee (2014); Rosendaal (2009); Szulanski (1996)
Unprovenness	Whether the knowledge has a proven record of previous usefulness.	-	Szulanski (1996)
Value of knowledge	The value of what one will receive for achieving the outcome of knowledge transfer or sharing.	+	Watson and Hewett (2006)
Properties of the department			
Age	Seniority influences the acceptance of project members' conceptual contributions.	+	Friesl et al. (2011)
Artifact network know-how and skill	A participant has knowledge in how to use an artifact network for efficient knowledge transfer.	+	Salleh et al. (2011)
Artifact network self-efficacy	Belief in one's capabilities to organise and execute knowledge sharing.	+	Tsai and Cheng (2010, 2012)
Champion	Key person who sets the stage for learning by acting as an awareness-enhancing agent or an advocate for new competence development.	+	Nevis (1995)
Conservatism	A political or social philosophy that promotes retaining traditional social institutions in the context of the business culture.	-	Kotter (2007)
Commitment	The relative strength of an individual's identification with, and involvement in a particular organisation or work team.	+	Tsai and Cheng (2012); Yu et al. (2013)
Competence	The ability for an individual to do a task properly.	+	Usoro and Majewski (2011)

Property	Definition	Effect on knowledge transfer	Source
Frequency of knowledge reuse	How often an individual use knowledge retrieved from someone else.	+	Watson and Hewett (2006)
Incentives for sharing knowledge	Rewards or other motivations for why an individual should engage in knowledge transfer.	+	Salleh et al. (2011); Willem and Buelens (2007); Usoro and Majewski (2011); Verburg and Andriessen (2011)
Integrity	The quality of being honest and having strong moral principles.	+	Usoro and Majewski (2011)
Knowledge-sharing intention	An individual's commitment to carrying out knowledge sharing.	+	Tsai and Cheng (2010); Wu (2013)
Lack of absorptive capacity	An individual or a group's ability to exploit new knowledge.	-	Szulanski (1996)
Lack of motivation	Individuals do not regard that external needs or motives of selflessness are fulfilled by participating in knowledge transfer.	-	Szulanski (1996); Wu (2013)
Lack of retentive capacity	How well a recipient of knowledge is able to retain the transferred knowledge.	-	Szulanski (1996)
Micro-Politics	Individuals represent interests with other goals than the intention of the sharing unit.	-	Friesl et al. (2011)
Outcome expectancy	Perceived result such as rewards, incentives, reputation, and appreciation for participating in knowledge transfer.	+	Usoro and Majewski (2011); Kaše et al. (2009)
Ownership	A feeling that a process or improvement in a business belongs to oneself.	+	Han et al. (2010)
Perceived benefits	The sender and recipient's expected rewards for participating in knowledge transfer.	+	Michailova and Gupta (2005); Usoro and Majewski (2011)
Perceived costs	The sender and recipient's cost of contributing in knowledge transfer.	-	Michailova and Gupta (2005); Usoro and Majewski (2011)
Project performance	The degree to which project performance is enhanced by knowledge reuse will be positively related to the frequency of knowledge contribution.	+	Watson and Hewett (2006)
Social identification	The degree to which an individual relates to organisational members and the organisation as a whole.	+	Rosendaal (2009); Willem and Buelens (2007); Carmeli et al. (2011)
Social ties	Strong or weak information-carrying networks between people.	+	Usoro and Majewski (2011); Bosua and Scheepers (2007)
Tenure in the organisation	A contractual right for the employee not to have its position terminated without just cause.	-	Carmeli et al. (2011)

Continued on next page

Property	Definition	Effect on knowledge transfer	Source
Trust	The source and/or recipient of knowledge is perceived as reliable.	+	Szulanski (1996); Mariano (2013); Park and Lee (2014)

Properties of the relations			
Arduous relationships	A laborious and distant relationship between two interacting units where the relation is especially demanding because of the lack of intimacy and established social ties.	-	Szulanski (1996); Yu et al. (2013); McLaughlin (2010)
Betweenness centrality	The structural position of a team in relation to other teams in an organisation.	+	Yu et al. (2013)
Communication	To which degree there is an exchange av meanings and information between the entities in the organisation.	+	Park and Lee (2014); McLaughlin (2010); Ditillo (2012)
Dependence (on partner)	To which degree the tasks, processes and results of one is influenced by another entity.	+	Park and Lee (2014); Rosendaal (2009); Wu (2013)
Shared cognition	The shared perspective on and perception of the reality of several entities in an organisation.	+	Yu et al. (2013); Wu (2013)
Reciprocity	The degree to which entities interact mutually and know each other.	+	Usoro and Majewski (2011); Verburg and Andriessen (2011)
Social relationships	The social ties and activities that exists between two entities in an organisation.	+	Usoro and Majewski (2011); Bosua and Scheepers (2007)

Properties of the context			
Casual ambiguity	The precise reasons for success or failure in replicating knowledge are unknown, or the utility of knowledge is unclear.	-	Szulanski (1996)
Cooperative norms	Group-held beliefs about how members should behave in cooperative contexts.	+	Yu et al. (2013)
Culture	A shared set of norms, values and perceptions which develop when organisational members interact with each other and the environment.	+	Howell and Annansingh (2013); Glomseth et al. (2007); Kim et al. (2012); Szulanski (1996)
Environmental stability	The rate of change in the nature of the environment.	+	Michailova and Gupta (2005)
Formal and informal social networks	Presence of social structures to transfer knowledge.	+	Verburg and Andriessen (2011); Bosua and Scheepers (2007); Chandler (1962)

Property	Definition	Effect on knowledge transfer	Source
Formal systems	Use of reliable and efficient systems, procedures and process descriptions.	+	Willem and Buelens (2007); Verburg and Andriessen (2011); Howell and Annansingh (2013); Michailova and Gupta (2005)
Leadership roles in knowledge sharing culture	Leader's behaviour and leadership styles and whether it encourages knowledge sharing.	+	Carmeli et al. (2011); Han et al. (2010); Harvey (2012)
Learning opportunities	The degree to which the possibility to adapt new skills and knowledge is facilitated.	+	Salleh et al. (2011); Friesl et al. (2011); Kim et al. (2012)
Organisational justice	The internal norms, rules and notion of fariness that governs the organisational behaviour.	+	Tsai and Cheng (2012); Park and Lee (2014)
Physical distance	Degree of physical distance between entities which the knowledge is shared across.	-	Yu et al. (2013); Wu (2013)
Power games	To which extent there exists an exchange of favours in order to serve self-interests.	+	Willem and Buelens (2007); Verburg and Andriessen (2011)
Proper composition of teams	Size and competences of team members.	+	Verburg and Andriessen (2011)
Punitive action	Unwillingness to take responsibility or report potential dangers and problems.	-	Kim et al. (2012)
Rank-system	The degree to which there exists a hierarchical system within the organisation.	-	Friesl et al. (2011); Ditillo (2012)
Resources	Means such as time, money and personnel available to relevant activities.	+	Kotter (2007)
Shared network(s) of information and knowledge-based artifact network	The existence of networks and aids that help transfer knowledge within the organisation.	+	Bosua and Scheepers (2007); Verburg and Andriessen (2011)
Suspicion (Between team and main organisation)	Mistrust between innovative team and the rest of the organisation.	-	Friesl et al. (2011)
Time	Amount of time available to conduct a procedure or process.	-	Kotter (2007)
Top-down communications	Communicating processes from top management.	+	McLaughlin (2010)
Value diversity	The variety in assumptions and ideas about tasks, work approach and goals.	+	Rosendaal (2009)

Table 7: Properties identified in empirical literature

DESCRIPTIVE FINDINGS

Code	% of all coded segments
Leadership roles in knowledge sharing culture	6.43
Communication	5.96
Arena	5.72
Formal systems	5.64
Formal and informal social networks	4.39
Unprovenness	3.53
Culture	3.37
Cooperative norms	3.21
Relatedness	3.13
Time	3.06
Learning opportunities	2.90
Value of knowledge	2.66
Observation/Work in other departments	2.66
Conservatism	2.59
Shared cognition	2.51
Lack of motivation	2.27
Environmental stability	2.27
Competence	2.19

Code	% of all coded segments
Champion	2.12
Physical distance	2.04
Resources	1.96
Top-down communications	1.88
Interest	1.88
Commitment	1.88
Ease of knowledge access	1.80
Social ties	1.65
Social relationships	1.65
Ownership	1.41
Proper composition of teams	1.33
Incentives for sharing knowledge	1.33
Dependence (on partner)	1.33
Perceived benefits	0.94
Power games	0.94
Casual ambiguity	0.86
Trust	0.78
Tenure in the organisation	0.78
Shared network(s) of information and knowledge-based artifact networks	0.78
Project performance	0.63
Punitive action	0.63
Micro-Politics	0.63

Code	% of all coded segments
Suspicion (Between team and main organisation)	0.55
Artifact network know-how and skill	0.55
Lack of absorptive capacity	0.47
Age	0.47
Perceived costs	0.39
Rank-system	0.39
Lack of retentive capacity	0.39
Organisational justice	0.39
Knowledge-sharing intention	0.39
Integrity	0.39
Reciprocity	0.39
Social identification	0.31
Outcome expectancy	0.31
Artifact network self-efficacy	0.31
Frequency of knowledge reuse	0.16
Betwenness centrality	0.16
Department	0.08
Arduous relationships	0.08
Casual ambiguity	0.08
Value diversity	0.08

Table 8: Properties identified through coding

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