Exploring Swedish Hospitals’ Transition towards becoming more Data-Driven
A Qualitative Case Study of Two Swedish Hospitals

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Date of submission: 120525
ABSTRACT

The Swedish health care sector must improve productivity in order to deal with an increased demand from an aging population with limited resources. In the tradition driven health care sector, transitioning towards becoming more data-driven has been identified as a potential solution. This explorative qualitative case study explores how individual employees perceive this development at two Swedish hospitals. The results complement theory by presenting propositions that explains drivers and barriers of the transition, but also the outcomes of it as perceived by the employees. The study primarily concludes that (1) a lack of trust in data and a tradition to base decisions on gut feelings in conjunction with low IT competence make hospital culture a major obstacle for the transition, and that (2) it is important to understand the employees’ perceived outcomes of becoming data-driven as it affects their support of the transition. The results provide a platform for future research to build on and are valuable for practitioners as they seek to utilize the drivers and mitigate the barriers.

Keywords: BI, BI to the masses, business analytics, decision making, data-driven, data quality, health care, productivity
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Introduction

Incredible amounts of data are generated in organizations every day. The modern organizations have moved from simply collecting to actively analyzing data in order to gain a competitive advantage. Recently, a study of 179 large publicly traded firms in the US showed that organizations that emphasize decision making based on data and business analytics show 5-6 percent higher productivity than expected given their other investments and information technology (IT) usage (Brynjolfsson, Hitt and Kim, 2011). IT has previously been recognized as a significant driver of productivity and qualitative studies have shown that the organization’s ability to process information leads to increased performance (Ayres, 2008; Davenport and Harris, 2007; Loveman, 2003).

Many industries are predicted to benefit greatly from the wide range of analytical tools associated with data through increased transparency, experimentation, innovation and supporting decision making (Manyika et al., 2011). In particular, the health care industry has a lot to gain by using the data generated by the many interactions between the health care system and the individuals of society (Diamond, Mostashari and Shirky, 2009; Orszag, 2008). The increasing need for data analysis in the health care sector is driven by rising health care costs, gaps in quality, monitoring needs of the outcome of drugs and treatments to improve safety, but also calls for studies of the comparative effectiveness of procedures for diagnosis and treatment (Diamond, Mostashari and Shirky, 2009).

In Sweden, a recent study by the Confederation of Swedish Enterprise shows that the Swedish health care face similar challenges and must improve productivity in order to deal with an aging population, medical technological innovations and increasing demands from the population – in combination with only a slight increase of resources (Lindevall and Källberg, 2011). The same study also concludes that Swedish health care is largely driven by tradition, and that the current suboptimal use of resources can be reduced and productivity increased by adopting a more data-driven approach. While many hospitals are currently trying to utilize the gains hidden in its data, the differences are still substantial and productivity can vary with up to 40 percent between different hospitals (Lindevall and Källberg, 2011). Thus, the Swedish hospitals face challenges in making the transition from being tradition driven to data-driven and it is not yet fully understood.
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why the transition is happening slowly. It is obvious that helping hospitals to make the transition towards being more data-driven would be of value to the health care sector and thereby the society at large.

Exploring the Transition from Tradition to Data

While integrative theories (e.g. value of information\(^4\), decision making\(^5\), sense-making\(^6\), and business analytics\(^7\)) can explain why the hospitals should become more data-driven from an aggregated level, existing research provide little understanding of the practical difficulties that Swedish hospitals face during the transition towards becoming more data-driven. Based on this discrepancy we argue that there is a need to investigate the difficulties the hospitals face and therefore this study will explore Swedish hospitals’ transition towards becoming more data-driven.

In a pre-study conducted with practitioners\(^8\) it became clear that in order to understand the transition there is a need to understand the employees that will be affected by it, and whose adoption will determine its very success. There also seem to be few studies that investigate and try to explain the transition from the employees’ perspective. In this sense, an analysis on an individual level is necessary to explore the transition. Rather than discussing the causality between data and productivity, which is a common theme among researchers, we want to describe the transition as it is told by the employees experiencing it. Thus, the purpose of this study is to explore Swedish hospitals’ transition towards becoming more data-driven from the perspective of the employees experiencing it.

During the pre-study we also identified that practitioners and hospitals alike require a deeper understanding of the factors that drives and hinder the transition towards being more data-driven, but also that the outcomes of being data-driven as perceived by the employees are important in order for the employees to accept the transition. Therefore, two broad research questions were formulated to guide us in the exploration of Swedish hospitals’ transition towards becoming more data-driven. The first question emphasizes how the drivers and barriers affect the transition and the second question emphasizes how the employees perceive the outcome of the transition. We aim to provide an increased understanding of the transition and intend to build new theory by summarizing the drivers, barriers and perceived outcomes in a set of propositions

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\(^4\) See Galbraith, 1974; Blackwell, 1953.
\(^6\) See Boland, 2008; Weick, 1988; 1993; 1995; Weick, Sutcliffe and Obstfeld, 2005.
\(^7\) See Davenport and Harris, 2007; 2010; Watson, 2009.
\(^8\) The pre-study was conducted with practitioners at the analytics software company QlikTech, see Appendix A for a detailed description of QlikTech.
(Eisenhardt, 2007). Since this study is exploratory and qualitative by nature (Merriam, 1994: 31) and seek to assess the unknown it will be designed as a case study (Corbin and Strauss, 2008: 25; Eisenhardt, 2007).

The results of this study will contribute to existing research by exploring the practical difficulties that employees experience in the specific Swedish hospital environment in the transition towards becoming more data-driven. The results will also highlight important areas that need further attention from researchers. Potential insights from the study will be valuable for employees, practitioners and consultants at Swedish hospitals and will facilitate the transition towards becoming more data-driven.

**Thesis Logic and Disposition**

As stated in the introduction, previous research does not explain the practical difficulties that Swedish hospitals encounter. It is not our purpose to challenge existing theories or to test them, but rather to complement them with a practical perspective. Therefore, the purpose of the Literature Review is to give the reader an understanding of the theoretical perspective from which we approached our research. Based on a review of existing literature combined with insights from our pre-study, we identified three important theoretical areas for understanding the transition towards becoming more data-driven; decision making, business analytics and analytics for the masses.

**Decision making** is fundamental in all activities in an organization (Blenko, Mankins and Rogers, 2010), ranging from deciding on the hospital’s strategy to an individual nurse’s choice how to anaesthetize a patient. Decision makers use information systems which collect and distribute data (O’Brien and Marakas, 2006), which are called **business analytics**. Because of the increasing IT maturity of society and the development of easy-to-use analytical systems, organizations are starting to distribute access to analytics tools to members that previously were without (Watson, 2009), thereby providing **analytics for the masses**. As we want to explore new concepts to understand the practical difficulties that Swedish hospitals face (Merriam, 1994: 27), we do not use the literature review to create a theoretical model (Corbin and Strauss, 2008: 21); instead we will conclude the literature review with a summary of the prominent themes that we have found.

In Field Preparations and Procedure, we go into depth on our choice of methodology. In short, we chose to do our study explorative as we try to understand something unknown (Corbin and Strauss, 2008: 25), qualitative because the purpose of the study require an in-depth understanding of the individuals’ perceptions and experiences (Merriam, 1994: 31), and a case study because we need an understanding of the specific Swedish hospital context in order to address our purpose

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9 Use of a drug to induce partial or total loss of sensation prior to surgery.
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(Yin, 2003: 9). The case study was conducted in two organizations; Danderyd’s Hospital (hereafter Danderyd’s) and Mölndal’s Hospital (hereafter Mölndal’s), with six interviews from each organization. In addition to the interviews, observations were made and the hospitals provided us with several documents. The collected data was coded and categorized continuously to identify common themes and concepts at each hospital, based on our theoretical background, the pre-study, and the continuous analysis from the moment the data was collected.

In Findings from the Field we present the case organizations followed by our analysis, which describes the transition as told by the employees experiencing it, and important findings are continuously summarized in propositions throughout the text. In the end, the propositions are summarized and grouped according to their corresponding research question; the exploration of the drivers and barriers of the transition and the exploration of how the employees perceive the outcome of the transition.

In Discussing the Findings we discuss our propositions in relation to the two research questions and elaborate on our study’s contribution to the exploration of Swedish hospitals’ transition towards becoming more data-driven. We conclude that hospitals can utilize the drivers and mitigate the barriers, but that it requires a lot of effort as the drivers and barriers are complex and interwoven. In line with our pre-study we also conclude that when employees understand the benefits of being data driven they are more prone to support the transition. As anticipated, the transition proved to be complex with different factors, belonging to different domains of knowledge, affecting each other.
Literature Review

Data-driven Decision Making

To understand why the use of data and analysis positively impacts performance, we need to take a look at the very means by which data can be transformed into action; *decision making*. The aim of any decision-maker is to determine what state of nature prevails so he can choose the action that yields the highest return (Blackwell, 1953). In order to do so, the decision maker requires all information about all the possible options. While there is no such thing as perfect information\(^{10}\), Blackwell (1953) argues that more information is always better because it aids the decision-maker in choosing the right action and should therefore lead to a higher return. Consequently, more information always improves performance\(^{11}\). But there are factors that limit the quality and quantity of information that the decision-maker requires to accurately judge decisions; time and cost constraints are two of many\(^{12}\) (Bazerman and Moore, 2009: 2-3). This lack of information is also called bounded rationality (March and Simon, 1958, Simon, 1957).

Decisions are a complex phenomenon and while it is easy to explain decisions from a normative and explanatory standpoint with bounded rationality, practice tends to be far more complex (Clark, 2010). As an example Clark (2010) argues that decisions also have to be assessed in light of the interdependent behaviour of individuals in a group context characterized by culture, processes, and cognitive IT tools, and in light of organized anarchies where decisions are made by people and groups with different interests who interacts, bargains and competes.

To cope with the uncertainty caused by the lack of information, and in order to increase the speed of decision making, the decision maker is able to make decisions unconsciously. Bazerman and Moore (2009: 3) makes a distinction between *System 1* and *System 2* thinking, where the former is; intuitive; fast; automatic; effortless; implicit; and often emotional decision making, while the latter is slower, conscious, effortful, explicit and more of a logical process (Bazerman and Moore, 2009: 3; Kahneman, 2003). Bazerman and Moore (2009: 3) argue that most of life’s smaller decisions are made with *System 1* thinking. The busier the decision makers are, or the more complex the situation is, the more likely are they to rely on *System 1* thinking. This is not

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\(^{10}\) Perfect information is not possible since it would require “infinite regress, whereby every argument makes an inference from assumptions and verifying each assumption calls for additional information” (Popper, 1935: 4; 1963: 21 cited in Citroen, 2011: 494).

\(^{11}\) In practice, this means that if the decision maker is able to identify a finer subset of outcomes, either through finer-grained information or reduced statistical noise in the information, performance can be increased.

\(^{12}\) Other factors involve the decision maker’s ability to hold information in memory as well as intelligence limitations and perceptual errors (Bazerman and Moore, 2009: 2-3).
necessarily a bad thing; based on experience the decision maker is able to make efficient decisions without sacrificing quality (Milkman, Chugh and Bazerman, 2009). Another concept related to System 1 thinking is heuristics, which explains how decision makers rely on rules of thumb when making decisions in complex environments (Tversky and Kahneman, 1982). Heuristics are helpful in most instances but can also lead to severe errors if the decision maker applies them to the wrong situation. Being largely experience and intuition-based, heuristics are inherently flawed by the decision maker’s biases (Bazerman and Moore, 2009: 5) – and might also be hard to explain and justify to others (Davenport, Harris, and Morrison, 2010; Kahneman, Slovic and Tversky, 1982).

System 1 thinking and the use of heuristics are praised managerial traits, but while the ability to take efficient decisions based on intuition and experience is positive, more and more companies rely less on a leader’s intuition and more on data-based analytics to minimize the risks of going astray (Brynjolfsson, Hitt and Kim, 2011; Davenport, Harris and Morrison, 2010: 1). Moreover, Milkman, Chugh and Bazerman (2009) argue that errors caused by heuristics and biases are growing costlier as more people are put in decision making responsibility, where they face ambiguity and large amounts of information. Decisions not based on data most often leave money on the table; for example, a business might set prices on products and services based on what it believes the market is ready to pay rather than using data of what consumer have been willing to pay in the past (Davenport, Harris and Morrison, 2010: 2). Davenport, Harris and Morrison (2010: 4) conclude that ‘to make better decisions and take the right actions, we have to use analytics’.

### Business Analytics

Design or technologies that collect and distribute accurate, trustworthy and sufficient information for decision making will improve performance (Argote, 1982; Galbraith, 1974; Tushman and Nadler, 1978) and current experts claim that data is becoming an important way for leading companies to outperform their peers (Manyika et al., 2011).

When talking about such technologies and designs to handle data you inevitably come to discuss terms like Enterprise Resource Planning (ERP) systems\(^{13}\), Business Intelligence (BI) systems\(^{14}\), Decision Support Systems (DSS)\(^{15}\) and Analytics\(^{16}\). These systems are not mutually exclusive and

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\(^{13}\) An ERP system links and integrates the organization’s units in the same information system (Motiwalla and Thompson, 2009; Davenport, 1998).

\(^{14}\) Business Intelligence can roughly be defined as “...a broad category of applications, technologies, and processes for gathering, storing, accessing, and analyzing data to help business users make better decisions” (Watson 2009).

\(^{15}\) Decision Support Systems is any computerized systems for decision support (Turban, Aronson and Liang, 2005).
the definitions tend to mix up, making it difficult to distinguish them from each other. No matter the definitions and names, a company needs an information system that can supply the organization with the information that the decision-makers require (O‘Brien and Marakas 2006). Bogza and Zaharie (2008) states that functioning analytics should deliver the right information to the right person at the right time which is a prerequisite for making good decisions.

The technologies mentioned above potentially generate a wide range of benefits, including; cost and time savings; decision making support; improved business processes; and identification of strategic business objectives (Davenport, Harris and Morrison, 2010: 76; Watson, 2009). For examples by industry, see Table 1 below.

**Table 1: Common analytics applications**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Analytical applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Services</td>
<td>Credit scoring, fraud detection, pricing, program trading, claims analysis, underwriting, customer profitability</td>
</tr>
<tr>
<td>Retail</td>
<td>Promotions, replenishments, shelf management, demand forecasting, inventory replenishment, price and merchandizing optimization</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Supply chain optimization, demand forecasting, inventory replenishment, warranty analysis, product customization, new product development</td>
</tr>
<tr>
<td>Transportation</td>
<td>Scheduling, routing, yield management</td>
</tr>
<tr>
<td>Health care</td>
<td>Drug interaction, preliminary diagnosis, disease management</td>
</tr>
<tr>
<td>Hospital</td>
<td>Pricing, customer loyalty, yield management</td>
</tr>
<tr>
<td>Energy</td>
<td>Trading, supply, demand forecasting, compliance</td>
</tr>
<tr>
<td>Communications</td>
<td>Price plan optimization, customer retention, demand forecasting, capacity planning, network optimization, customer profitability</td>
</tr>
<tr>
<td>Services</td>
<td>Call center staffing, service/profit chain</td>
</tr>
<tr>
<td>Government</td>
<td>Fraud detection, case management, crime prevention, revenue optimization</td>
</tr>
<tr>
<td>Online</td>
<td>Web metrics, site design, recommendations to customers</td>
</tr>
<tr>
<td>Everyday business</td>
<td>Performance management</td>
</tr>
</tbody>
</table>

Source: Davenport, Harris and Morrison (2010: 76).

Most companies today have massive amounts of data at their disposal, and this development is driven by the declining cost of data storage and communication (Lyman and Varian, 2001) in combination with the digitalization of business processes (Davenport, Harris and Morrison, 2010:

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16 Analytics, or being analytical, do not necessarily refer to a technology but focuses more on the users; the use of analysis, data and systematic reasoning to make decisions. Putting analytics to work is about improving performance in key business domains using data and analysis (Davenport, Harris and Morrison, 2010: 4).
However, companies are not utilizing their data and are thereby missing out on the potential benefits (Davenport, Harris and Morrison, 2010: 8) – in fact 40 percent of major decisions are still based on managers’ gut feeling rather than facts (Davenport, Harris and Morrison, 2010: 1). Organizations across the world are using the same ineffective strategies; they collect and store a lot of data, but do not analyze the information to support their decision making (Davenport, Harris and Morrison, 2010: 9). The challenge organizations face today is not to find power for data processing, but rather how to use it to find meaningful correlations (Bollier, 2010).

According to Davenport, Harris and Morrison (2010: 122) the strength of analytics comes in making such connections; recognizing patterns in business activities, isolating the drivers of performance, and anticipating the effects of decisions and actions – thus gaining new insights and eliminating gaps between decisions and actions. To make connections they must examine how analytics fit into their entire business process (Davenport, Harris and Morrison, 2010: 122).

It is not only the quantity and the ways you use the data that impacts the outcomes of decision making. Data for decision making does not require complete accuracy, but bad quality could pose a problem for the decision-maker (Davenport, Harris and Morrison, 2010: 31; Watson, 2009) and should it lead to a failure the consequences can be costly (Redman, 1995; Strong, Lee and Wang, 1997). Watson (2009) argues that information needs to “be accurate enough for how it will be used; it needs to be consistently defined and used; all of the necessary data should be available; it should be timely enough; and it should be easily accessible, understandable, and usable”. However, Raghunathan (1999) shows that decision quality can be improved despite problems with data quality given that the decision maker has knowledge about the quality issues. Should the overall data quality improve and the decision maker be unaware of existing quality issues, the decision quality may even degrade (Raghunathan, 1999).

Orr (1998) argues that the best way to improve data quality is to increase the use of data within the organization, and Preuss (2003) found that by providing employees with relevant knowledge and skills the quality of the information they bring to decision making is improved, which leads to higher performance.

**Analytics for the Masses**

A crucial characteristic for any organization is the need to process information (Galbraith, 1974; Kogut and Zander, 1992; Tushman and Nadler, 1978) and organizations should therefore be designed to effectively process information (Galbraith, 1974), something the widespread digitalization of business processes has further emphasized (Citroen, 2011).
Analytics has evolved from command line interfaces to easy-to-use graphical interfaces, and from being generated quarterly only for few to being supplied to anyone instantaneously (Lyman and Varian, 2001, Watson, 2009). Thus, a variety of personnel now have access to real-time information (Watson, 2009) which is becoming increasingly important to conduct work more efficiently (Cody et al, 2002). This recent development of putting analytics and IT tools in the hands of more people has been labelled analytics for the masses or democratization of data (Lyman and Varian, 2001; Watson, 2009).

While most business processes can leverage data, most companies start by applying analytics for special occasions or functions where the need is obvious, called a craft approach. As decisions and analytics become familiar and routine, companies will benefit from an industrial approach which means that analytics are automated and integrated into all work processes (Davenport, Harris and Morrison, 2010: 124).

<table>
<thead>
<tr>
<th>Table 2: Two approaches to decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
</tr>
<tr>
<td>Continuity</td>
</tr>
<tr>
<td>Benefit</td>
</tr>
<tr>
<td>Investment</td>
</tr>
<tr>
<td>Time to implement</td>
</tr>
<tr>
<td>Speed of analysis</td>
</tr>
<tr>
<td>Staff</td>
</tr>
<tr>
<td>Memory of analysis</td>
</tr>
</tbody>
</table>


According to McKendrick (2008), traditional IT tools for analytics were built for exploratory analysis and not for everyday use. Therefore, successful democratized analytics is not happening by deploying traditional IT tools to frontline personnel, but instead by analytics delivered through decision support made available to the entire enterprise.

According to Avery and Watson (2004) there are some major challenges to bringing analytics to the masses. Firstly, the time, cost, and complexity to choose, acquire, and implement IT tools is vast. Secondly, the time and cost of training and supporting the users can be considerable. Often

17 Author is from data service firm Informatica.
users find it difficult not only to use the tools, but also understanding data and how data can be used in their everyday job.

**Concluding the Literature Review**

As problematized in the introduction, the literature discussed above can provide an aggregated understanding of the transition towards becoming more data driven. However, it fails to provide a practical and holistic understanding as it does not consider the employees’ perspective on the transition. Therefore the literature review merely forms a starting point for our research.

In Table 3 below is a summary of the prominent elements in the literature themes.

**Table 3: Summary of Literature Review**

<table>
<thead>
<tr>
<th>Theoretical theme</th>
<th>Prominent elements</th>
</tr>
</thead>
</table>
| **Data-driven decision making** | • More information always leads to higher performance.  
• Time and cost are the main limitations to information for the decision-maker.  
• To cope with uncertainty by lack of information the decision-maker can make fast, intuitive, experience based, decisions called system 1 thinking. The opposite is called system 2 thinking; slower, rational and information based. |
| **Business Analytics**     | • Design or technology that distributes accurate, trustworthy and sufficient information for decision making will improve performance.  
• Organizations are collecting massive amounts of data but they do not utilize the data enough for supporting their decision making.  
• The challenge is not processing the data; it is finding meaningful correlations in the data; recognizing patterns; isolating drivers; and anticipating effects of decisions.  
• The best way to improve data quality is to increase the use, knowledge, and skill of data in the organization. |
| **Analytics for the Masses** | • An organization should be designed to facilitate information processing; the digitalization of processes has great impact on how companies need to be designed.  
• Easier-to-use technology enables organizations to spread analytical tools among the employees.  
• Two major challenges with analytics for the masses are time, cost, and complexity of implementing IT-tools and the time and cost of training the users not only how to use the tool but also to understand how data can be used in their job. |
Field Preparations and Procedure

Stance and Philosophy

In any research it is important to reflect upon what values and assumptions we as researchers have and how they affect our research (Merriam, 1994: 34). We believe that people experience images of the reality through their senses, and not reality itself. Hence, in this paper we take the stance of critical realists. Critical realists believe there is a difference between reality and how people experience reality, and consequently that one’s experience of reality cannot be understood independently of its context or social conditions (Dobson, 2002; Saunders, Lewis and Thornhill, 2009: 115). Therefore we believe that it is impossible to separate a phenomenon from its context and that it is of utmost importance to understand the context in which people experience their reality. Likewise, this paper is a result of how we perceive reality and we, as researchers, become a part of the context we study and become sensitive to influences from it (Merriam, 1994: 32).

Research Design

In order to contribute towards a better understanding of Swedish hospitals’ transition towards becoming more data-driven we have chosen to conduct an explorative qualitative case study of two Swedish hospitals.

Since we want to find new insights about the transition and asses those insights in a new light we chose to conduct a qualitative study (Saunders, Lewis and Thornhill, 2009: 39). To understand the drivers and barriers of the transition as well as the perceived outcomes, we have to understand how the employees experience the transition based on their individual perceptions and experiences (Merriam, 1994: 31). In addition, since our purpose is explorative, a qualitative method is well suited as it often tries to answer “how-questions” and is exploratory in its nature (Merriam, 1994: 31; Saunders, Lewis and Thornhill, 2009: 139; Silverman, 2010: 11; Yin, 1981).

As the context of the employees and the transition is of utmost importance to understand this phenomenon, a case study is the most suitable approach as the purpose of a case study is to investigate a phenomenon within its real-life context (Yin, 2003: 9). In addition, since we aim to develop propositions based on rich empirical data, using cases are more likely to produce propositions that are accurate, interesting and testable (Eisenhardt, 2007). The study was done at two hospitals subsequently in order to minimize the risk that the findings are specific for one

18 A realist, on the other hand, believes that the reality is independent of the human mind and assumes a scientific approach in the development of knowledge (Saunders, Lewis and Thornhill, 2009: 115).
hospital. As replication logic is central to creating propositions and building theory, each hospital serves as a distinct experiment that stands on its own as an analytical unit (Eisenhardt, 2007). Furthermore, while single-case studies can richly describe the existence of a phenomenon, multiple-case studies provide a stronger base for theory building and more robust propositions as they are based on more varied empirical evidence (Eisenhardt, 2007). In other words, two cases provide twice the analytical power and therefore the propositions created are typically more robust, generalizable and testable. Thus, after the study was conducted at Danderyd’s we sought to see if the results could be replicated at Mölndal’s. Although the results will have little basis for scientific generalization to organizations in general (Yin, 2003: 10), we seek to contribute with insights for other Swedish hospitals transitioning towards becoming more data-driven (Merriam, 1994: 184).

**The Pre-study**

In order to get a better understanding of the transition from a practitioner’s view, a pre-study was conducted with the analytics software company QlikTech. The pre-study helped us to refine our research question (Saunders, Lewis and Thornhill, 2009: 30) and develop knowledge around relevant concepts (Merriam, 1998: 77). The pre-study consisted of two interviews and multiple documents. See Table 4 for an overview of the data collected in the pre-study.

The first interview was a group interview conducted at QlikTech’s office in Stockholm with the CEO and the CMO of the Nordic countries. Since our research question was yet to be refined we asked open-ended and semi-structured questions regarding trends, concepts, themes, and ideas that had caught our interest during the first stages of our literature review. Based on recommendations received during the first interview, another interview was conducted with the Global Vice President of Products at QlikTech through Skype. This interview focused on the impact of QlikTech’s products in organizations and the type of value the company believes it delivers.

During the interviews notes were taken and both the interviews were recorded and transcribed. The documents were provided to us in the first interview and all documents were read, summarized, and discussed together. The customer cases were the most valuable since they gave us a better understanding of how the industry uses QlikTech software. Since QlikTech is an

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19 Skype is a computer software that enables video calling.
20 The customer cases contained background, challenges, solutions and benefits from 16 customers, of which 15 were from the healthcare sector.
entity beyond our control with their own interests, we took a critical stance to the information provided as we reviewed the material.

**Table 4: Data collection, Pre-study**

<table>
<thead>
<tr>
<th>Position/Object</th>
<th>Date</th>
<th>Time</th>
<th>Type</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordic CEO and CMO, QlikTech</td>
<td>22-02-2012</td>
<td>60 min</td>
<td>Group interview</td>
<td>All</td>
</tr>
<tr>
<td>Global Senior Vice President of Product, QlikTech</td>
<td>02-03-2012</td>
<td>45 min</td>
<td>Interview, Skype</td>
<td>Olof Carlson, Viktor Thunmarker</td>
</tr>
<tr>
<td>16 customer case studies</td>
<td>23-02-2012</td>
<td></td>
<td>Document</td>
<td>All</td>
</tr>
<tr>
<td>White paper by QlikTech <em>Business Discovery: Powerful, User-driven BI</em></td>
<td>23-02-2012</td>
<td></td>
<td>Document</td>
<td>All</td>
</tr>
<tr>
<td>3 white papers on the QlikTech product written by the International Data Corporation (IDC)</td>
<td>23-02-2012</td>
<td></td>
<td>Document</td>
<td>All</td>
</tr>
</tbody>
</table>

**Literature Review**

In accordance to Bogdan and Biklen (1982: 30 cited in Merriam, 1994: 67), the literature review was conducted in order to merge a set of logically connected assumptions, concepts and definitions to control the direction of our thinking and researching. The literature review has been a continuous process throughout the research by constantly collecting, evaluating and reviewing the literature as the research developed (Saunders, Lewis and Thornhill, 2009: 60). The reviewing was conducted by previewing, summarizing, and comparing and contrasting the literature (Saunders, Lewis and Thornhill, 2009: 62).

**Case Selection**

As the purpose of this study is to develop propositions, and not test existing theory, we used theoretical sampling (Eisenhardt, 2007). Thus, the cases were handpicked because they best matched our research question (Saunders, Lewis and Thornhill, 2009: 237) and were “particularly suitable for illuminating and extending relationships and logic among constructs” (Eisenhardt, 2007: 27). The points of contact at the hospitals were obtained through so called “snowballing” (Saunders, Lewis and Thornhill, 2009: 240), where our initial contact at QlikTech put us in contact with QlikTech Sweden’s head of sales for the health care sector, and he in turn put us in contact with various hospitals.
Our sampling was based on four criteria which were derived from the scope of our research question and the pre-study. The first criterion was that the organization was a hospital in Sweden. The second criterion was that the hospital had initiated some type of initiative to become more data-driven which included more than 20 users. We used QlikTech’s product QlikView\textsuperscript{21} as a proxy for this criterion. The third criterion was that the organization had experienced an increase in productivity after starting the initiative. The productivity increase was identified through the customer cases received in the pre-study and verified through dialogue with the hospitals\textsuperscript{22}. The fourth criterion was that the organization had the possibility of collaborating closely during the research in order for us to get a rich data collection and a deep understanding of the transition, organization and its context.

Using the adoption of QlikView as a proxy for an initiative to become more data-driven poses a problem to the generalizability of the findings as we cannot guarantee that we would get the same results if the organization used any other software. However, as this study aims to explore the transition towards becoming more data-driven, little attention was paid to the software system per se. The implementation of QlikView was instead seen as a determination by the hospitals to become more data-driven. It could be argued that sampling only departments that use QlikView poses a problem as the sample might not be representative for the entire hospitals. However, our purpose is to investigate the transition towards becoming data-driven from the perspective of the employees, regardless of how far the departments have come in the transition towards becoming more data-driven.

**Data Collection**

We used the identified literature themes and the insights from the pre-study as a loose starting point for our interviews. As we wanted to look at the phenomena with fresh eyes, this method enabled us to identify concepts and build propositions to understand the transition with a broad question and little pre-identified concepts (Corbin and Strauss, 2008: 21; Merriam, 1994: 27). The lack of pre-identified concepts also enabled us to stay open and consider dimensions that we did not think of before we started our research – which is even more important if the phenomenon is unknown (Corbin and Strauss, 2008: 25). While this approach might seem unorthodox, the creative nature of qualitative research is one of its core strengths (Pratt, 2009). As we did not know what answers we might get, we made it a continuous process to reconsider the direction of research throughout the data collection (Silverman, 2010: 221-222).

\textsuperscript{21} For more information about the QlikView product, see Appendix A.
\textsuperscript{22} The productivity increase was not based on financial data or calculations.
In order to explore individuals’ perspectives on the transition, a rich understanding of the context and case organization is needed (Yin, 2003; Robson, 2002: 178). Therefore a variety of data sources were used in a triangulation fashion (Yin, 2003: 13-14), which is one of the case study’s strengths (Merriam, 1994: 85). Data was therefore collected through individual interviews with employees at different hierarchical levels, internal documents, and observations. The data was collected in two sessions, one at each organization, over two different days. Table 5 and 6 summarize the data collected at each organization.

**Table 5: Data collection at Danderyd’s**

<table>
<thead>
<tr>
<th>ID</th>
<th>Position/Object</th>
<th>Date</th>
<th>Time</th>
<th>Type</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>Controller for Medical Clinic</td>
<td>29-03-2012</td>
<td>40 min</td>
<td>Interview</td>
<td>Mikael Zetterberg</td>
</tr>
<tr>
<td>I2</td>
<td>Controller for Anaesthetics</td>
<td>29-03-2012</td>
<td>45 min</td>
<td>Interview</td>
<td>Olof Carlson, Viktor Thunmarker</td>
</tr>
<tr>
<td>I3</td>
<td>Project leader finance and accounting</td>
<td>29-03-2012</td>
<td>40 min</td>
<td>Interview</td>
<td>Olof Carlson, Mikael Zetterberg</td>
</tr>
<tr>
<td>I4</td>
<td>Medical information specialist</td>
<td>29-03-2012</td>
<td>45 min</td>
<td>Interview</td>
<td>Viktor Thunmarker</td>
</tr>
<tr>
<td>I5</td>
<td>Operations developer</td>
<td>29-03-2012</td>
<td>45 min</td>
<td>Interview</td>
<td>Olof Carlson, Viktor Thunmarker</td>
</tr>
<tr>
<td>I6</td>
<td>Operations director Orthopaedics</td>
<td>29-03-2012</td>
<td>40 min</td>
<td>Interview</td>
<td>Olof Carlson, Mikael Zetterberg</td>
</tr>
<tr>
<td>O1</td>
<td>Corridor discussion</td>
<td>29-03-2012</td>
<td>10 min</td>
<td>Observation</td>
<td>Viktor Thunmarker</td>
</tr>
<tr>
<td>O2</td>
<td>Coffee room</td>
<td>29-03-2012</td>
<td>15 min</td>
<td>Observation</td>
<td>Mikael Zetterberg</td>
</tr>
<tr>
<td>O3</td>
<td>Brief tour of the department</td>
<td>29-03-2012</td>
<td>15 min</td>
<td>Observation</td>
<td>All</td>
</tr>
<tr>
<td>D1</td>
<td>Danderyds Sjukhus: Vänligt och proffsigt, smidigt och säkert</td>
<td>29-03-2012</td>
<td></td>
<td>Document</td>
<td>All</td>
</tr>
<tr>
<td>D2</td>
<td>I ständig utveckling: Danderyds sjukhus kvalitetsredovisnings 2010</td>
<td>29-03-2012</td>
<td></td>
<td>Document</td>
<td>All</td>
</tr>
<tr>
<td>D3</td>
<td>Danderyds sjukhus Verksamhetsplan 2012</td>
<td>29-03-2012</td>
<td></td>
<td>Document</td>
<td>All</td>
</tr>
</tbody>
</table>

**Table 6: Data collection at Mölndal’s**

<table>
<thead>
<tr>
<th>ID</th>
<th>Position/Object</th>
<th>Date</th>
<th>Time</th>
<th>Type</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>I7</td>
<td>Operations director of Orthopaedics</td>
<td>02-04-2012</td>
<td>45 min</td>
<td>Interview</td>
<td>All</td>
</tr>
<tr>
<td>I8</td>
<td>Care unit manager Orthopaedics</td>
<td>02-04-2012</td>
<td>45 min</td>
<td>Interview</td>
<td>All</td>
</tr>
<tr>
<td>I9</td>
<td>Operations developer of ANOPIVA</td>
<td>02-04-2012</td>
<td>50 min</td>
<td>Interview</td>
<td>All</td>
</tr>
<tr>
<td>I10</td>
<td>Operations director of AN/OP/IVA</td>
<td>02-04-2012</td>
<td>45 min</td>
<td>Interview</td>
<td>All</td>
</tr>
</tbody>
</table>
A brief meeting and a tour of the department with our contacts was set up when we first arrived at the hospitals to provide us with information about the organizations, the departments, and the departments’ role. At Danderyd’s all of us were not able to attend all interviews, but we tried to be at least two interviewers in order to minimize the extent of subjective interpretations of data and context. On the other hand, the semi-overlapping interviews gave us time for observations and sporadic discussions which proved valuable. For example, one discussion by the coffee machine by one of the researchers led to a spontaneous interview with the medical information specialist which proved very valuable for our data collection. The documents were handed to us during the initial brief tour of the department by our contacts. At Mölndal’s all of us could attend all but one interview which was valuable in our interpretation of the data and context, but gave less time for observations. However, in the room where we had our interviews there was a whiteboard full of diagrams, goals, plans, and production statistics which we could observe in between our interviews.

In total, twelve interviews were conducted; six at Danderyd’s and six at Mölndal’s; five with personnel who had managing and operating responsibility, two controllers, three operations developers, one project leader and one with a technical support function. By talking with people from different functions, including managers, developers, and operating personnel, we could better explore the different perspectives on the transition and minimized the risk for data compromised by retrospective sensemaking by image-conscious informants (Eisenhardt, 2007).

The purpose of the observations is to cover the environment, participants, interactions and potential elusive variables (Merriam, 1994: 104). The observations are difficult to quantify as they were a continuous activity during the sessions, but we have listed the most important observations in Table 5 and 6 above. For example, one observation of a discussion between one of our interview subjects and a doctor, made by one of the researchers in the corridor between two interviews, showed the interaction between them and their views on being data-driven which did not appear as clearly in any interview. This observation proved valuable as a complement to
our findings from the interviews. Important observations were documented in notes and contributed towards an increased understanding of the hospitals’ transition and their context.

The documents from Danderyd’s includes an operational plan including controlling measures and quantified goals for the organization, something we found useful as it helped us confirm certain findings from the interviews.

**Interview Selection and Procedure**

The interviews were selected based on “snowballing” where our contact at each hospital helped us select subjects according to our research proposal, criteria and availability of the interviewees.

Our criteria were that all of the participants were part of some type of initiative for becoming more data-driven using QlikView, and that the sample included different roles and functions. This method comes with a bias problem as respondents are likely to select individuals who are similar to themselves, which might result in a homogeneous sample (Saunders, Lewis and Thornhill, 2009: 240). However, during the data collection it became clear that at least some of the interviewees had very different views on the matters, which implies that the sample was less homogeneous than initially expected. The interviewee selection also risks the same problem as discussed in Case Selection; those we interview could be more data-driven than the average employee and could consequently not be considered representative for the hospital. However, studying the transition from the perspective of the employees requires interviewing employees that are currently undergoing the transition.

In order to understand the transition we required a method that gave us an opportunity to explore and probe answers (Saunders, Lewis and Thornhill, 2009: 324). Therefore we chose to combine structured and semi-structured interviews, which is a common method in qualitative research and especially in exploratory studies (Merriam, 1994: 88-89). The interviews started with pre-defined questions to get standardized information from each informant, followed by two groups of semi-structured questions designed to explore new insights and information (Merriam, 1994: 89; Yin, 2003: 90). The first type of semi-structured questions was of a practical manner, focusing on their daily work and usage, while the second type was insight questions, focusing on their thoughts and views on the transition. These semi-structured questions led the interview to discussions we had not previously considered, but which were significant for our understanding and exploration of the transition (Saunders, Lewis and Thornhill, 2009: 324). The questions were asked using four of Patton’s (1980: 207) six categories of questions to collect data during interviews; background and demographic (e.g. position, education, years employed etc.),
experiences and behaviour (e.g. Can you describe how you use data today?), thoughts (e.g. What do you think drives this development?) and feelings (e.g. How do you feel when that happen?).

In order to stay open and avoid influencing the interviewee we tried to appear genuinely naive during the interviews (Yin, 2003: 90). While we used an interview guide (see Appendix B), we tried to stay open for new directions and explorations. For example, during one of the interviews the interview subject started the interview by explaining the interviewee’s view of the problem in an almost upset and aggressive manner before we even had time to ask our first question. Consequently, we had to adjust the interview to the subject and not push the interviewee into our specific questions, and instead we focused on understanding the interviewee’s view. All interviews were held at the hospitals’ premises and we dressed casually in order to fit into the hospital environment (Saunders, Lewis and Thornhill, 2009: 330).

All interviews were held in Swedish and were recorded with the permission of the interviewees. Notes were taken during the interviews to help us remember thoughts, aspects and moments during the interview. Once completed, all interviews were transcribed for analysis – leaving us with 114 pages of empirical data. We began by transcribing one interview each and then compared the results in order to minimize the impact of differences in transcription techniques.

**Analysis**

The interview transcriptions, important notes from documents, and observations were coded, grouped, and compared through the use of the computer analysis software MAX QDA. To minimize the risk that data collected at the first case hospital impacted data collected at the second, we treated each hospital as its own analytical unit and did not analyze the data until the interviews at both hospitals were completed (Eisenhardt, 2007). The coding was done in two phases. First, the data was sorted into more than 30 different categories that were based on our theoretical background, pre-study, and continuous analysis from the moment the data was collected (Silverman, 2010: 7; Merriam, 1994: 32). During this stage we analyzed the data at a granular level, so called micro coding, with the purpose of exploring the data and generate ideas (Corbin and Strauss, 2008: 59). Due to the inconsistent nature of the interview data these categories were constantly evaluated and expanded. For example, the initial category of “decision making” was expanded into subcategories such as “Joint decision making” and “Justifying decisions”.

In the second phase, we focused on explaining the data and used broader areas in order to step back and view the data from a broader perspective (Corbin and Strauss, 2008: 60). For example,
“Joint decision making” was incorporated into “Collaboration”, and “Justifying decisions” was incorporated into “Communication”. 

In Findings from the Field we firstly present the case organizations followed by our analysis. One of the challenges in multiple-case research is to stay within spatial constraints while also conveying both the propositions and the rich empirical data that supports them (Eisenhardt, 2007). To present a narrative of each case is therefore not suitable in multiple-case research as the propositions are lost and the text balloons (Eisenhardt, 2007). Therefore, the best way to present the cases is to present the propositions in sections and support them with empirical evidence (Eisenhardt, 2007). The analysis describes the transition as told by the employees experiencing it and important findings are continuously summarized in propositions throughout the text. In the end, the propositions are summarized in tables (Eisenhardt, 2007) and grouped according to their corresponding research questions; the exploration of the drivers and barriers of the transition and the exploration of how the employees perceive the outcome of the transition.

As the analysis is presented as a narrative, divergent opinion, views and findings specific to one hospital are referenced to the original transcriptions. In order to make reading comfortable, these references are placed in footnotes with the corresponding interview and row number; e.g. I5R40 (Interview 5, Row 40), D2 (Document 2) and O1 (Observation 1).

Validity and Reliability

Qualitative research rests on other assumptions and holds alternative views of the world than traditional research, which means that the nature of validity and reliability differs (Merriam, 1994: 176, 193). In qualitative research it is important to conduct the research with a strong internal validity as it affects both the external validity and the reliability (Merriam, 1994: 181, 183). In qualitative research internal validity is primary determined by the reconstruction of data and if it corresponds to the reality as told by the informants (Merriam, 1994: 178). In order to improve internal validity we followed the recommendations of Merriam (1994: 179-180). Firstly, we clearly state our stance towards knowledge creation as critical realists. Secondly, we have conducted multiple interviews about the same phenomenon at each case to reach data saturation. Thirdly, we used triangulation techniques; e.g. multiple researchers and used multiple data sources with interviews, observations and documents. Lastly, we actively received feedback by other researchers as our research went about and results came fourth.

The aim of this study is not to create results applicable to all situations, but to situations that mirrors the conditions that the study rests on (Merriam, 1994: 183, 185). In qualitative research, “the reader must ask himself what is applicable to his or her situation” (Walker, 1984: 34 cited in
Merriam, 1994: 187). In order to increase the external validity we followed the recommendation of Merriam (1994: 187); we present a thick narrative in the analysis to provide the reader with enough data to decide if the same conditions apply to other cases, we describe our cases in the beginning of the analysis so the reader can compare the type of case with his or her situation, and we based the analysis on two cases.

In terms of reliability, it is important to note that in qualitative research a replication will not give the same results as the study builds on human behaviour – and people constantly change their behaviour (Merriam, 1994: 180-182). Merriam (1994: 182-183) argues that a qualitative study should instead aim to make the results have meaning, be consistent and dependent. Consequently, we have explained our position; underlying assumptions that the study rests upon, theories relating to our topic, techniques and criteria for case and interviewee, and tried to convey an understanding of the context. As mentioned above, we used triangulation and include a detailed description of our method.
Findings from the Field

Danderyd’s Hospital

Danderyd’s was opened in 1922 and is today Sweden’s fourth largest emergency hospital, treating 330,000 patients every year out of which 80 percent comes in through the emergency room\(^\text{23}\). The hospital’s mission is to offer emergency and specialist care to over 440,000 inhabitants in the northern part of Stockholm’s county\(^\text{24}\). Danderyd’s has approximately 3,400 employees and a turnover of 2.8 billion SEK\(^\text{25}\).

Danderyd’s invested in QlikView in 2004 and rolled it out to 35 users in physician and administrative roles across two functions; care delivery analysis and resource planning analysis. The goals was to gain visibility on utilization of beds and patient scheduling to optimize existing resources and leverage data that was at the time of deployment trapped across different administrative systems\(^\text{26}\).

While the organization implemented QlikView in 2004 it was not until 2007, when the board actively decided that Danderyd’s was to become more data-driven, that the development took off. The decision from the board enabled the hospital to employ two medical information specialists working specifically on improving the rate of which the organization is increasing their use of data by teaching others how to find data by themselves, as well as developing the system as programmers. According to our interviewees, Danderyd’s is considered to be in the forefront in using data to improve hospital operations, which has led to other hospitals expressing interest in learning and adopting similar approaches\(^\text{27}\).

In the beginning of 2012 the hospital had over 200 QlikView users in various roles and functions. The management at Danderyd’s wants even more employees to have access to the data and QlikView to become a natural part if day-to-day operations.

Möln达尔’s Hospital

Möln达尔’s was founded in 1942 and is since 1997 a part of Sahlgrenska University Hospital, a university and regional hospital that provides emergency and specialist care to the 770,000 inhabitants of Gothenburg’s county – making it Northern Europe’s largest hospital\(^\text{28}\). Sahlgrenska
University Hospital has approximately 16,000 employees and an annual turnover of 12.3 billion SEK. Sahlgrenska University Hospital consists of several smaller organizations spread out through Gothenburg; Sahlgrenska Hospital, Östra Hospital, Högsbo Hospital and Mölndal's.

Sahlgrenska University Hospital deployed QlikView to 25 users in 2007 across two functions; care delivery analysis and financial analysis. The goal was to integrate data from existing patient journal systems with five other systems and provide employees with faster access to critical information. At Mölndal's, QlikView was implemented when they merged the Gothenburg region’s orthopaedic clinics and relocated them to Mölndal’s. By implementing QlikView, the hospital also sought to address issues for which they had received criticism from the Swedish National Board of Health and Welfare29.

Mölndal’s wants to roll out QlikView to more employees as it believes that the organization would benefit greatly from it.

**External Pressure and Controlling Through Goals**

Resources and funding for the hospitals are distributed in part based on the fulfilment of goals established by the county council30, e.g., the goal to operate all hip-joints within 24 hours, and should these goals not be fulfilled the hospitals can be sanctioned. Consequently, the county council’s goals are given large attention by hospital management. The goals also enable the county council and hospitals to compare progress with hospitals nationwide in order to find areas of improvement as well as increasing transparency for patients and politicians alike. External pressure is not only received from the county council, but also from press and media. For example, the head of operations at Mölndal’s explained that when government hospital rankings are published in the media they get a lot of internal attention31.

Both hospitals holds individuals evangelizing data-driven solutions, and while they are an important driver for the transition it is evident that it is not until senior management actively engage in the matter or politicians exert pressure that real change occur. It seems to be difficult for the hospitals to initiate a stronger focus on data only from inside – external pressure have shown to be a starting point for becoming more data-driven at both Danderyd’s and Mölndal’s32.

Proposition 1: *External pressure (e.g. goals from county council or demand for transparency from society) affects Swedish hospitals’ transition towards becoming more data-driven.*

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29 “Socialstyrelsen” in Swedish.
30 “Landsting” in Swedish.
31 I10R72.
32 I1R33, I6R78.
The goals provided by the county council are broken down into specific goals and priorities for each department. Management emphasize how the main productivity gains from an increased focus on data primarily come from the ability to set and follow up goals, and by visualizing and communicating the progress towards them. For example, an operations director at Mölndal’s said “If we can communicate that we are ten surgeries, or two days of care, above or below target it would stimulate productivity among employees” and at the orthopaedics unit relevant data is put on the website and also printed for everyone to see during the morning meetings.

For management it is natural that the transition towards becoming more data-driven involves increased emphasis on goals. However, for the employees the increased focus on goals is not as natural; they do not see the connection between data, goals and care quality as easily. In addition, the operations director at Danderyd’s believes measuring data that the organization can understand and act upon is important; measuring things that the organization cannot relate to creates irritation and reluctance. While it is easy to discuss data, one interviewee adds that it can be difficult to make people take action based on data unless it correlates to goals or to what management is focusing on. If data powered goals are used correctly it will make the employees aware of how they contribute to the hospitals’ performance. For example, a section manager at Mölndal’s said that “I regularly tell my physicians to spend some time looking at the data to increase awareness of where they are heading.”

Proposition 2: Employees perceive that an outcome of becoming more data-driven is an increased focus on goals.

Most of the goals handed to each department are connected to the use of resources; whether it is the total patients treated per year, patients per nurse or the utilization of beds and surgery rooms. Consequently, the hospitals have paid much attention to data in resource planning, and therefore resource planning is one of the processes that have come the furthest in terms of data usage. However, one director implied that people in general would be surprised if they knew how little the hospital actually knows about its production. Despite this, all of the interviewees were impressed and proud by how much they could now improve and control their production. It is
clear that resource planning is one of the first steps towards becoming more data-driven as it is a relatively simple and direct mean for the hospital to fulfil its goals.

**Proposition 3:** *Employees perceive that an outcome of becoming more data-driven is the ability to optimize the use of resources.*

### Getting Answers Faster and Increasing Motivation

Since employees are able to get answers faster than previously they grow less reluctant to use data. It seems that the modern IT tools reduce the time and cost constraints to obtain information, which according to our interviewees mean that they use data more than they previously did. One operation director at Mölndal’s exemplified this when he told us that;

> “Now I can get answers in 10 minutes, instead of having to create a template to search from, start the search, go to lunch and hope that it might be done when I get back, and then move the data into Excel or any other analytics program to try and create and understandable output. QlikView does this automatically.”

An operations developer at Mölndal’s also believes that the change lies in the speed; “I can look at something and then just click once more to compare it with data from last year.”

Several of our interviewees state that they make decisions more quickly when they get data faster and easier. One operations director at Mölndal’s does not believe that the way he makes decisions has changed, but that the road to a decision is significantly shorter as he gets data faster. A controller at Danderyd’s says that beside the speed of which data can be accessed, the hospital is able to make decisions based on data faster than before as employees working the floor have access to critical data and thus also able to make decisions themselves.

**Proposition 4:** *Employees perceive that an outcome of becoming more data-driven is the ability to make more decisions based on data during the same period of time as before.*

The operations director at Danderyd’s believes that quick and easy access to data and results also allows the hospital to try different hypotheses, and adjust actions accordingly before making final decisions. According to the operations director at Danderyd’s, having close to real time data creates a situation where employees is able to see the results of their work faster, change their

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41 I10R28-29.
42 I9R18.
44 I2R117.
45 I6R38.
actions accordingly, and see that they have the ability to affect the outcome\textsuperscript{46}. While the shorter time between action and results is mostly good, it can also be experienced as negative for those who are working very hard without the numbers changing\textsuperscript{47}.

The interviewees at both hospitals highlighted the employees’ intrinsic will to do a good job and that data enables them to quickly see the results of their work. The care unit manager at Mölndal’s said that “Everyone wants to be best in class”\textsuperscript{48} which was complemented by the operations director at Danderyd’s who said that “Most people want to do a good job and improve things, it is like a competitive spirit, and while some people might get stuck in a complaining manner – most of us want to do something about it”\textsuperscript{49}. The increased focus on data has increased the transparency between departments as well as making the departments more aware of how their performance affects the organization as a whole, which in combination with the competitive spirit has increased the productivity at the hospitals. Moreover, both the medical information specialist and the operations director at Danderyd’s pointed out that data gives an increased possibility of giving attention, a pat on the shoulder or mentioning a person’s name during a meeting, to those who took action and made improvements, which is appreciated\textsuperscript{50}.

Reducing the time between action and observed results to a matter of hours or days instead of months or years seem to motivate employees as they can see the results of their work faster, compare themselves with peers, and get attention from managers.

Proposition 5: Employees perceive that an outcome of becoming more data-driven is that they become more motivated as the time between action and results is reduced.

Increased Understanding and Collaboration

A reoccurring theme in many interviews was how the employees spent a lot of time discussing everything from how sick their average patients were to how many patients they treated last month. Many experienced that the inability to agree on how the situation looked like was frustrating; discussions did not lead to decisions but rather to more discussions. For example, one care unit manager at Mölndal’s had troubles optimizing staffing as her view on how work-intensive patients were differed from her employees’ – leading to a situation where her employees often wanted more nurses per patient than what was necessary\textsuperscript{51}. With indisputable data on how

\textsuperscript{46} 16R18, 16R39.  
\textsuperscript{47} 16R22.  
\textsuperscript{48} 18R76.  
\textsuperscript{49} 16R46.  
\textsuperscript{50} 16R46, 14R75.  
\textsuperscript{51} 18R40.
work-intensive their patients actually were, the care unit manager could present her employees with an objective view of the situation and thus ending discussions. In other words, a shared understanding of an issue leads to a more productive work environment as it let hospitals focus on acting on the current situation rather than discussing what the situation is. Consequently, the hospitals have moved from unproductive discussions based on gut feelings to productive action-focused discussions based on data. The same can be applied to decisions, regardless of their importance, and our interviewees believe that having data at their disposal enables the hospitals’ employees to move from decisions based on gut feeling and experience to decisions based on data.

Proposition 6: Employees perceive that an outcome of becoming more data-driven is a shared understanding of the current situation.

An emphasis on data does not only decrease unfruitful discussions, but does also create a shared understanding which contributes to constructive discussions and collaboration across internal borders. Employees in different clinics or departments who have not discussed much traditionally are starting to communicate across hospital borders when interesting data emerges.

With data, the hospitals can more easily identify issues – which seldom lie within one department only. For example, at Mölndal’s the medical team responsible for the surgeries was not performing a sufficient amount of surgeries per day, but with data the hospital was able to identify that the underlying reason did not lie with the surgeons. Instead, the problem resided with the team preparing the patients for anaesthesia, which were underestimating the impact their performance had on the whole care delivery chain, and therefore failed to realize the importance of preparing the patients properly and on time. In the end, data helped them to identify the problem and bring all relevant teams together to solve the issue. Similarly, in many situations at both hospitals data has been an important ingredient to increase collaboration and cooperation across departments as a mean to solve issues.

At Mölndal’s, regular meetings have been established to discuss progress on set goals based on data in something called process meetings. These meetings occur once or twice a month and the teams analyse last week’s results together and look into a suitable course of action. The participants include the responsible persons for the daily operations in central surgery; surgeons, anaesthetists, surgery nurses and anaesthesia nurses. It is not unusual that people disagree during

52 I8R40.
53 I2R60-61, I4R69, I5R62-64.
54 I9R63.
these meetings and it is a good forum to increase awareness of processes that are not working optimally\textsuperscript{55}. The operations developer at Mölndal’s is certain that the meetings are beneficial, but adds that one of the greatest benefits is more indirect; employees from different parts of the hospital get to know each other and start talking the same language – thus increasing further collaboration outside the meetings as well\textsuperscript{56}. On the individual level we observed several anecdotes were employees told us of situations where they, with access to data, felt empowered to bring up topics for discussion or initiate collaboration across traditional department boundaries.

Proposition 7: Employees perceive that an outcome of becoming more data-driven is increased collaboration between individuals and between departments.

Data Quality

Many interviewees stress the importance of data that is indisputable, and that a prerequisite for data to be indisputable is that it is of high quality. Should data be of low quality, employees risk losing their trust in it. Unsurprisingly, data quality is central in most interviews because of its direct impact on decision quality. More interesting is the data quality’s direct impact on all attempts to become data-driven; employees lose trust in the data and feel discouraged to use it if the quality is low\textsuperscript{57}. The project leader from the finance and accounting department at Danderyd’s stated that the data does not need to be much inaccurate at all in order for the individual to lose trust in any data at the hospital\textsuperscript{58}. In addition, if data quality is low and data differs from the employee’s gut feeling, they are more prone to question the data which makes a shared understanding and collaboration more difficult.

Our interviewees talk of two main reasons for low data quality at the hospitals; lack of coherent definitions across departments and data collection methods that differ and are flawed. Firstly, the hospitals have a number of different IT systems working together with different underlying definitions of data that does not always align. As an example, at Danderyd’s, the definition of delivering a child differs between departments; the clinics are measuring when resources are used during the mother’s stay at the hospital, while finance and accounting are measuring when the hospital receives payment – which can occur several days after the mother has left the hospital\textsuperscript{59}. Employees at both Danderyd’s and Mölndal’s said it does not matter what system you have or

\textsuperscript{55} I9R78-79, I9R69-70.
\textsuperscript{56} I9R74-75, I7R96-97.
\textsuperscript{57} I4R26, I3R32.
\textsuperscript{58} I3R39, O1.
\textsuperscript{59} I3R37.
how flexible it is; if the numbers does not match in two systems, the employees lose their trust in data. Secondly, health care is built on interactions between human beings and is, according to our interviewees, therefore not easily turned into numbers. Many processes at the hospitals are still manually registered by employees, which creates numerous points where data quality risks on being compromised. As the medical information specialist at Danderyd’s put it: “You don’t have a number on if the patient is feeling well or if the patient have gotten this or that medicine since this information is interpreted and put into systems by hospital personnel, which makes it possible for multiple sources of error.” While the medical information specialist has noticed an increased interest to work with and solve problems related to data collection, the hospital still has a fair amount of work to do concerning routines that make personnel at the clinics register events in the same way. On the positive side, one of the controllers at Danderyd’s said that since employees use more and more data they realize how important it is to register it correctly, for example in the patient journal systems.

Many interviewees highlight that starting to use data across the organization has increased the focus on data quality. Still, good data quality requires common definitions of measures and identical routines throughout the organization and neither of Danderyd’s and Mölndal’s hospital is there yet. Related to the data collection, the section manager at Mölndal's would like the hospital to register more data, but points out that it is impossible to put more registering responsibility on the personnel, since every second spent on registering data is a second less spent with the patient – something most employees are already upset with.

It is evident that in an environment already unaccustomed to data, issues with data quality will negatively impact the transition towards becoming more data-driven.

Proposition 8: Data quality affects Swedish hospitals’ transition towards becoming more data-driven.

Hospital Culture and Technological Fit

The interviewees at both Danderyd’s and Mölndal’s talk about an increasing demand for information over the last couple of years from operations and management alike. This increasing demand is described as a cultural change. The new culture is characterized by not

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60 I3R41, I8R56.
61 I4R26.
62 I2R120.
63 I1R128.
64 I4R71, I5R68, I12R5.
65 I6R54, I5R68.
only monitoring operations but also by a demand for action based on the new insights that are gained from data. Employees in general are starting to wonder about the reasons for yesterday’s result, and the medical information specialist at Danderyd’s said she nowadays gets more and more questions like “Can we look at this?”, “Is it possible to extract this type of data?” and “How can we get this information?”66. The change in culture is also manifested by the restlessness that the departments show when they do not get the data they are used to67.

The cultural change at Danderyd’s is described as a “one-step-at-a-time process that does not yet permeate the whole organization”68. Certain groups of employees seem to have had an easier time embracing data and change their work behaviour more easily than others. One interviewee added sarcastically that the length of education did not always correlate with their eagerness to embrace data. Instead, the interviewee perceives that the will to adopt a data-driven approach has to do with interest, leadership maturity and a willingness to trust numbers over gut-feeling. Another interviewee notes that the younger and more computer savvy the employees are, the more prone they are to appreciate data and IT tools.

That employees differ in their willingness to adapt a data-driven approach is not surprising, in fact, this is probably true in most organizations. However, we see that the hospitals face a great challenge in the transition towards becoming more data-driven, as the employees working on the hospital floor seem to be more interested in patient health care than results and numbers regarding production. Many interviewees are talking about a resistance towards numbers from operations; the care unit manager at Mölndal’s said that in her colleagues’ opinion “numbers are just numbers and not something important”69. It seems that this is because her colleagues do not see the connection between data and patient satisfaction, the latter being their primary focus70. At the hospitals, talking about numbers has even been considered ugly; one operations developer at Mölndal’s explains that “it is still considered a little wrong to talk about numbers because of the already heavy burden on the employee”71. Sometimes departments do not want to see or hear about the data – even when they represent good results72. Most interviewees highlight the stress that employees experience in the hospital environment, with or without data. In addition, it seems that the employees view talking about numbers as undermining their work as they believe they do good enough work without measuring every aspect. The managers we talked to were

66 I4R71, O2.
67 I5R37.
68 I6R54.
69 I8R58.
70 I8R102, I11R51.
71 I9R65.
72 I9R41.
aware of this resistance towards numbers but they also talked about a significant change that has occurred in the latest decade; the section manager of orthopaedics at Mölndal’s worked in the private sector before returning to the hospital and he said that he noticed a significant change in how much employees are talking about numbers and data today compared to seven years ago⁷³.

The overall consensus among our interviewees is that hospital employees in general lack an understanding of how health care quality, patient experience, productivity, and financials are correlated – or at least that their priorities lie elsewhere. It seems most hospital employees are intrinsically motivated by helping the individual patient and providing high quality care rather than thinking about optimizing the production process. The operations director at Mölndal’s said that a reoccurring argument from the older generation of the staff is “These are sick people; we have to take care of them, the cost does not matter” and he adds that the same generation has a difficult time to understand that if the hospital put all resources on one patient, it has no resources for the next one⁷⁴. According to him, the employees working on the floor are event-driven, focusing on treating patients as they arrive at the hospital, while he sees the hospital work more as a consequence of production and financials⁷⁵. He summarized many of the difficulties that the hospital faces in the following quote:

“If I talk about production results and finance at the doctor’s gatherings one of the seniors doctors might say to me 'that is interesting to you as a director, but it does not concern us’. That makes me think that I have a pedagogical challenge; communicating the idea that we have one mission and nothing else to accomplish. [...] The logic of finance and production is a challenge; employees might understand what our mission is and what we need to produce, but to then put that into relation with what the real cost is, and bringing that down to the floor and explain why it matters how we are putting patients to sleep – that is a tough nut to crack.”⁷⁶

Insightfully, he adds that the reason could be that they are not responsible for results in the same way he is. Consequently, when management tries to improve productivity it does not necessarily correlate well with the average employee’s motivation. In the clinics, all activities that are not directly impacting patient health care, such as production and financial planning and IT, are considered abundant and of little practical value.

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⁷³ I11R119.
⁷⁴ I10R60.
⁷⁵ I10R84.
⁷⁶ I10R51.
Proposition 9: Hospital culture affects Swedish hospitals’ transition towards becoming more data-driven.

It seems that the acceptance of technology and the increasing focus on data is increasing every day as existing employees are learning, and more computer savvy personnel joining the hospitals. While the amount of computer savvy personnel is indeed increasing, the average IT competence level is still low. The low IT competence level in combination with the cultural resistance towards numbers leads to a situation where employees are sceptical of any new IT tool. Therefore, having an IT tool that fit the hospital employees’ competence level is crucial for the transition. Representatives from both hospitals gave much credit to the strong visualization capabilities of the new IT tool, which they argue was its strongest asset. For example, the section manager at Mölndal’s said that the data must be easily presentable through diagrams or graphs in colour – just presenting numbers is not working in the hospital environment. Furthermore, the interviewees highlight new IT tool’s intuitive interface as a prerequisite for starting to use data in the daily work. The operations developer at Danderyd’s said that “People working in health care are not IT people, they do not like working with data, and therefore the IT tool must be very easy to use in order for it to make an impact”.

Proposition 10: The fit between the characteristics of the IT tool and the employees’ IT competence level affects Swedish hospitals’ transition toward becoming more data-driven.

Resources Allocated to the Transition

In both Danderyd’s and Mölndal’s the employees have so much to do that they feel buried in work and can barely keep up with the inflow of patients, which leaves them with little time for learning how to use data and even less how to incorporate it into everyday work. The care unit manager at Mölndal’s believes that the largest obstacle for using data to its full potential is the lack of time, and several of our interviewees explain that employees are so busy with what they are doing right now and have their hands full with putting out fires that they do not have time to increase their usage of data. Lack of time as a reason for not engaging more in data is persistent throughout our interviews among directors, managers and employees alike. For example, the section manager at Mölndal’s says that he should be looking at hospital production overviews, but that he does not even have time to focus on the areas that he is responsible for. The operations developer at Mölndal’s also explains that managers are not very enthusiastic when she

77 I11R48.
78 I8R97-98.
79 I11R18.
shows up to show teach them how to use data better, as they are occupied by their day-to-day work. A controller at Danderyd’s argues that there is not only a lack of time for finding data, but also a lack of time for acting on it; “I can understand that people do not have time when I send out things, but in some cases they request it themselves, but do not take the time to act on it when they get it”.

In terms of resources, one major difference between the two hospitals that greatly impacts the transition is the fact that the active support from the board at Danderyd’s have enabled them to recruit two medical information specialists to work solely with data. Mölndal’s does not have such competence in-house and must therefore rely on expensive external consultants. Several employees mention that relying on costly consultants increases the threshold to seek help. The medical information specialists at Danderyd’s claim that having them in-house is unique and valuable as their work is important to help the organization increase their use of data. For example, they supply management with data but do also participate in management meetings to increase the use of data and stimulate an open dialogue to understand their needs and avoid misunderstandings. Several of the interviewees at Danderyd’s claim that the medical information specialists understand the hospital environment better than external consultants, something that is considered to be of great importance. Having more resources in the form of two medical information specialists has also enabled Danderyd’s to provide training sessions for both new and existing users and constantly working with improving data quality.

Proposition 11: Available resources, e.g. time and budget, affect Swedish hospitals’ transition towards becoming more data-driven.

Summarizing the Findings

The propositions that this thesis has established are summarized and grouped below according to the two research questions; Table 7 corresponds to the exploration of the drivers and barriers of the transition towards becoming more data driven and Table 8 corresponds to the exploration of how the employees perceive the outcome of the transition.

Table 7: Drivers and barriers of the transition towards becoming more data-driven

<table>
<thead>
<tr>
<th>#</th>
<th>Proposition</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>External pressure (e.g. goals from county council or demand for transparency from society) affects Swedish hospitals’ transition towards becoming more data-driven.</td>
</tr>
</tbody>
</table>

80 I12R63-64.
81 I12R91-93.
Data quality affects Swedish hospitals’ transition towards becoming more data-driven.

Hospital culture affects Swedish hospitals’ transition towards becoming more data-driven.

The fit between the characteristics of the IT tool and the employees’ IT competence level affects Swedish hospitals’ transition toward becoming more data-driven.

Available resources, e.g. time and budget, affect Swedish hospitals’ transition towards becoming more data-driven.

<table>
<thead>
<tr>
<th>#</th>
<th>Proposition</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Employees perceive that an outcome of becoming more data-driven is an increased focus on goals.</td>
</tr>
<tr>
<td>3</td>
<td>Employees perceive that an outcome of becoming more data-driven is the ability to optimize the use of resources.</td>
</tr>
<tr>
<td>4</td>
<td>Employees perceive that an outcome of becoming more data-driven is the ability to make more decisions based on data during the same period of time as before.</td>
</tr>
<tr>
<td>5</td>
<td>Employees perceive that an outcome of becoming more data-driven is that they become more motivated as the time between action and results is reduced.</td>
</tr>
<tr>
<td>6</td>
<td>Employees perceive that an outcome of becoming more data-driven is a shared understanding of the current situation.</td>
</tr>
<tr>
<td>7</td>
<td>Employees perceive that an outcome of becoming more data-driven is increased collaboration between individuals and between departments.</td>
</tr>
</tbody>
</table>
Discussing the Findings

Conclusion

The purpose of this study was to explore Swedish hospitals’ transition towards becoming more data-driven from the perspective of the employees experiencing it. We wanted to provide an understanding of the practical difficulties that the Swedish hospitals face by identifying drivers and barriers that affect the transition, but also the perceived outcomes of the transition as experienced by the hospital employees since the employees need to recognize the benefits of the transition in order to accept it.

When it comes to the drivers and barriers of the transition, some of our findings could in hindsight have been more or less expected. For example, hospital culture, allocated resources and technological fit could have been more expected than data quality and external pressure. In addition, dealing with these drivers and barriers require a lot of effort as they are all complex and interwoven; while they affect the transition they also affect each other. For example, in some cases it is clear that extensive work is not only required to fix certain issues (e.g. low data quality stemming from multiple IT systems, manual data collection and different definitions) but also to assess symptoms from these issues (e.g. loss of trust in numbers that years of low data quality have caused).

A lack of trust in data and a tradition to base decisions on gut feelings and experience in conjunction with a low IT competence make hospital culture a major obstacle for the transition. Employees view the patients as their primary focus and does not always see the correlation between an increased focus on data and better patient health care. To fully support a transition towards becoming more data-driven, employees have to believe that the transition does improve patient health care – and not only that it fulfils their prejudice of an increased focus on financial goals and an increased workload.

An interesting paradox is that while the increased focus on data is supposed to save time for employees buried in work, and ensure that they maximize their efforts, the very fact that they were buried in work was one of the primary reasons for why they did not increase their use of data. While the speed of the new systems vastly has reduced the time to find and use data, it is apparent that the underlying reasons for why employees do not engage in data lie outside the IT tools themselves. Instead, in order for employees to increase their use of data the hospitals might have the way they work. While the importance of having an IT tool that matches the employees
is applicable to most organizations, we argue that this is even more important in our cases because of the specific hospital culture, lack of resources, and low IT competence.

As in the case with data quality, external pressure played a significantly more important role than what was anticipated. Hospitals are organization with many stakeholders, and consequently many demands. Pressure from external stakeholders, e.g. in terms of goals from the county council and demand from society, was an important spark to drive the transition towards becoming more data-driven. It seems like factors specific to the hospitals, as discussed above, limits the hospitals’ ability to fully initiate and drive the transition by themselves. Instead, the hospitals need pressure from the outside.

When it comes to the outcomes of being more data driven as perceived by the employees; the ability to optimize the use of resources and the ability to make more decisions based on data during the same period of time could also perhaps have been expected in hindsight as they are direct outcomes. An increased focus on goals, a shared understanding, increased collaboration and increased motivation among employees might on the other hand be less expected as they are indirect outcomes. We see that the employees speaks higher of being data-driven when they can perceive the benefits. Thus, in line with what was suggested in our pre-study we note that if employees understand the benefits of being data driven they are more prone to support the transition. While the perceived outcomes were similar across both hospitals, different employees perceived different outcomes which could imply that they were only aware of benefits that affected themselves. As it is beyond the scope of this paper to compare the perceived outcomes to actual outcomes, we can only note that there might lie potential in communicating the benefits of being data driven in order to get more employees to support the transition – not only the benefits for specific employees, but also for departments, the hospital, and perhaps most importantly; the patients.

We believe that the results of this study are of great value when trying to understand the difficulties Swedish hospitals face when transitioning from tradition-driven to data-driven. Our results contribute with a better understanding of why the transition is happening slowly and what practitioners can do to facilitate a smoother transition.

As anticipated, the transition showed to be complex with different factors, belonging to different domains of knowledge, affecting each other. While we began this study with a theoretical stance in decision making and business analytics, it is clear that the transition is far more complex and covers a variety of domains such as organizational culture, management control, and motivation.

With that said, we have only scratched the surface of the challenges Swedish hospitals face when
transitioning towards becoming more data-driven and there are potentially other factors impacting the transition.

**Implications for Researchers and Practitioners**

While the findings in this study are specific to our case organizations, we saw no major differences between Mölndal’s and Danderyd’s hospital, and the important findings were also similar in both cases. We believe this is an indication that the results might be of interest to other Swedish hospitals undergoing a similar transition, even though the findings might not be fully applicable. Our explorative study have laid the first pieces of the puzzle to understanding the practical difficulties Swedish hospitals’ face during the transition to become data-driven as perceived by the employees. The propositions provide a platform for future research to build on; not only do the propositions we have identified require further in-depth attention, but there is also a need to explore more variables, and understand how they are related to each other. Furthermore, it would be interesting to study if our findings are applicable for other Swedish hospitals. Finally, another interesting topic to study is whether the transition towards becoming more data driven differs between state and privately owned hospitals, which our interviewees hinted on.

As for practitioners, it is important to consider how the drivers, barriers and perceived outcomes impact the transition towards becoming more data-driven in order to incorporate them in the transition strategy. By taking the findings into account, practitioners can utilize the drivers and mitigate the barriers to ensure a smoother transition. Questions the practitioners should ask themselves include; How do we plan to deal with hospital culture? How do we plan to deal with data quality issues? How do we get the full support of the employees? When it comes to the employees’ perceived outcomes of becoming data-driven, it is important to understand that they affect the employees’ attitude towards the transition, and that managers might be able to reduce resistance by communicating the outcomes of the transition.
References


Exploring Swedish Hospitals’ Transition towards becoming more Data-Driven


Exploring Swedish Hospitals’ Transition towards becoming more Data-Driven


Appendix A: QlikTech and QlikView

QlikTech is a business intelligence software company founded in Lund, 1993, and based in Radnor, Pennsylvania. QlikTech provide the business intelligence solution QlikView, which focuses on simplifying decision making for business users across organizations. With an intuitive graphical user interface QlikTech claims that QlikView enables anyone to use data and analytics, and thus that QlikView solves the “last mile problem” of business analytics. The in-memory associative technology behind QlikView leverages the latest advances in computing power and enables business users to assemble data from multiple sources, explore it, make discoveries, and uncover insights that enable them to solve business problems.

QlikView have more than 25,000 customers in over 100 countries in a variety of business areas, including several Swedish municipalities, county councils, and hospitals.

For more information about QlikTech and QlikView, visit www.qlikview.com.
Appendix B: Interview guide

Introduktion

- Berätta lite om dig själv och ditt arbete?
- Hur länge har du använt Qlikview?
- Vad använde ni för verktyg innan ni fick QlikView?
- Har du gått någon utbildning i systemet?
- Tycker du att din organisation arbetar datadrivet?
  (def: fattar beslut grundade på data / data genomsyrar verksamheten / data finns tillgängligt)

Praktiska frågor om användning och dagligt arbete

- Berätta lite om hur du använder QlikView i ditt arbete? Avdelningen? Sjukhuset?
- Hur tycker du att QlikView påverkar ditt arbete?
  Ditt beslutsfattande?
  Dina samarbeten och kommunikation med kollegor?
  Dina förståelse för avdelningen eller organisationen?
  Din möjlighet att få reda på saker du inte visste tidigare?

Insiktsfrågor

- Varför tror du att ni köpte in QlikView?
- Vad tror du att du uppnår genom att använda QlikView? Avdelningen? Sjukhuset?
- Vad tror du händer när man inför system som QlikView på sjukhus?