NTNU – Trondheim
Norwegian University of
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Implementation of Quality Management System in Sweco Norge

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Project Management
Submission date: June 2013
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Norwegian University of Science and Technology
Department of Industrial Economics and Technology Management

Implementation of quality management system in Sweco Norge

Implementering av kvalitetssikringssystem i Sweco Norge

By
Hedda Heier Hansen

Master Thesis for Master of Science in Project Management
Supervisor: Tim Kristian Andreas Torvatn
Submitted: June 11th 2013

NTNU
Norwegian University of
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MASTERKONTRAKT
- uttak av masteroppgave

1. Studentens personalia

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2. Studieopplysninger

Fakultet **Fakultet for Samfunnsvitenskap og teknologiledelse**
Institutt **Institutt for industriell økonomi og teknologiledelse**
Studieprogram **Project Management**

3. Masteroppgave

Oppstartsdato	Innleveringsfrist
15. jan 2013	**11. jun 2013**
Oppgavens (foreløpige) tittel **Implementering av kvalitetssikringssystemet i Sweco Norge AS**	
Oppgavetekst/Problembeskrivelse Sweco Norge AS har i flere år jobbet etter et kvalitetssikringssystem basert på ISO 9001. En har imidlertid sett at de ansatte ikke alltid bruker systemet i den utstrekning systemet forutsetter, noe det kan være flere årsaker til. For eksempel opplever de ansatte en tidspresset hverdag, og det kan være nærliggende å nedprioritere sekundære arbeidsoppgaver som kvalitetssikring. En annen utfordring kan være at mange opplever at det er en høy terskel for å ta i bruk systemet, og at det er tungrodd og for komplisert. I regionen Hedmark og Oppland er det dessuten en spesiell utfordring at staben vokste kraftig i 2011 (fra 20 til 53 personer). Dette betyr at Swecos kvalitetssikringssystem er nytt for mange. For å forsøke å håndtere disse utfordringene har kanditaten fått i oppgave fra ledelsen i regionen å bruke masteroppgaven til å utarbeide ett opplegg for bedre implementering av systemet. Kanditaten ønsker derfor å benytte aktuell teori om organisasjoner, endringsledelse, implementering, strategi, HR--ledelse mv. til å undersøke hvordan QA-systemet fungerer per dags dato, hvordan en tenker seg at det skal fungere og hvordan en kan oppnå dette. Masteroppgaven vil gjennomføres...	
Hovedveileder ved institutt **Førsteamanuensis Tim Kristian Andreas Torvatn**	Medveileder(e) ved institutt
Merknader **1 uke ekstra p.g.a påske.**	

4. Underskrift

Student: Jeg erklærer herved at jeg har satt meg inn i gjeldende bestemmelser for mastergradsstudiet og at jeg oppfyller kravene for adgang til å påbegynne oppgaven, herunder eventuelle praksiskrav.

Partene er gjort kjent med avtalens vilkår, samt kapitlene i studiehåndboken om generelle regler og aktuell studieplan for masterstudiet.

Hamar, 30/1-13
Sted og dato

Hedda H. Hansen
Student

Hovedveileder

Originalen lagres i NTNUs elektroniske arkiv. Kopi av avtalen sendes til instituttet og studenten.

NTNU

Fastsatt av Rektor 20.01.2012

STANDARDAVTALE

om utføring av masteroppgave/prosjektoppgave (oppgave) i samarbeid med bedrift/ekstern virksomhet (bedrift).

Avtalen er ufravikelig for studentoppgaver ved NTNU som utføres i samarbeid med bedrift.

Partene har ansvar for å klarere eventuelle immaterielle rettigheter som tredjeperson (som ikke er part i avtalen) kan ha til prosjektbakgrunn før bruk i forbindelse med utførelse av oppgaven.

Avtale mellom

Student: Hedda Heier Hansen	født: 27.08.86
Veileder ved NTNU: Tim Kristian Andreas Torvatn	
Bedrift/ekstern virksomhet: Sweco Norge AS	

og

Norges teknisk-naturvitenskapelige universitet (NTNU) v/instituttleder

om bruk og utnyttelse av resultater fra masteroppgave/prosjektoppgave.

1. Utførelse av oppgave

Studenten skal utføre

Masteroppgave	X
Prosjektoppgave	

(sett kryss)

i samarbeid med

Sweco Norge AS

bedrift/ekstern virksomhet

15. jan. 2013 – 11. jun. 2013

startdato – sluttdato

Oppgavens tittel er:

Implementering av kvalitetssikringssystemet i Sweco Norge AS

Ansvarlig veileder ved NTNU har det overordnede faglige ansvaret for utforming og godkjenning av prosjektbeskrivelse og studentens læring.

2. Bedriftens plikter

Bedriften skal stille med en kontaktperson som har nødvendig veiledningskompetanse og gi studenten tilstrekkelig veiledning i samarbeid med veileder ved NTNU. Bedriftens kontaktperson er:

Jan Østby

Formålet med oppgaven er studentarbeid. Oppgaven utføres som ledd i studiet, og studenten skal ikke motta lønn eller lignende godtgjørelse fra bedriften. Bedriften skal dekke følgende utgifter knyttet til utførelse av oppgaven:

3. Partenes rettigheter

a) Studenten

Studenten har opphavsrett til oppgaven. Alle immaterielle rettigheter til resultater av oppgaven skapt av studenten alene gjennom oppgavearbeidet, eies av studenten med de reservasjoner som følger av punktene b) og c) nedenfor.

Studenten har rett til å inngå egen avtale med NTNU om publisering av sin oppgave i NTNUs institusjonelle arkiv på internett. Studenten har også rett til å publisere oppgaven eller deler av den i andre sammenhenger dersom det ikke i denne avtalen er avtalt begrensninger i adgangen til å publisere, jf punkt 4.

b) Bedriften

Der oppgaven bygger på, eller videreutvikler materiale og/eller metoder (prosjektbakgrunn) som eies av bedriften, eies prosjektbakgrunnen fortsatt av bedriften. Eventuell utnyttelse av videreutviklingen, som inkluderer prosjektbakgrunnen, forutsetter at det inngås egen avtale om dette mellom student og bedrift.

Bedriften skal ha rett til å benytte resultatene av oppgaven i egen virksomhet dersom utnyttelsen faller innenfor bedriftens virksomhetsområde. Dette skal fortolkes i samsvar med begrepets innhold i Arbeidstakeroppfinnelsesloven[1] § 4. Retten er ikke-eksklusiv.

Bruk av resultatet av oppgaven utenfor bedriften sitt virksomhetsområde, jf avsnittet ovenfor, forutsetter at det inngås egen avtale mellom studenten og bedriften. Avtale mellom bedrift og student om rettigheter til oppgaveresultater som er skapt av studenten, skal inngås skriftlig og er ikke gyldig inngått før NTNU har mottatt skriftlig gjenpart av avtalen.

Dersom verdien av bruken av resultatene av oppgaven er betydelig, dvs overstiger NOK 100.000 (kommentert i veiledningen[2] til avtalen), er studenten berettiget til et rimelig vederlag. Arbeidstakeroppfinnelsesloven § 7 gis anvendelse på vederlagsberegningen. Denne vederlagsretten gjelder også for ikke-patenterbare resultater. Fristbestemmelsene i § 7 gis tilsvarende anvendelse.

c) NTNU
De innleverte eksemplarer/filer av oppgaven med vedlegg, som er nødvendig for sensur og arkivering ved NTNU, tilhører NTNU. NTNU får en vederlagsfri bruksrett til resultatene av oppgaven, inkludert vedlegg til denne, og kan benytte dette til undervisnings- og forskningsformål med de eventuelle begrensninger som fremgår i punkt 4.

4. Utsatt offentliggjøring

Hovedregelen er at studentoppgaver skal være offentlige. I særlige tilfeller kan partene bli enig om at hele eller deler av oppgaven skal være undergitt utsatt offentliggjøring i maksimalt 3 år, dvs. ikke tilgjengelig for andre enn student og bedrift i denne perioden.

Oppgaven skal være undergitt utsatt offentliggjøring i

ett år	
to år	
tre år	X

(sett kryss bak antall år hvis dette punktet er aktuelt)

Behovet for utsatt offentliggjøring er begrunnet ut fra følgende:

Oppgaven beskriver bedriftens kvalitetssikringssystem og hvordan dette oppfylles. Dette må betraktes som forretningshemmeligheter.

De delene av oppgaven som ikke er undergitt utsatt offentliggjøring, kan publiseres i NTNUs institusjonelle arkiv, jf punkt 3 a), andre avsnitt.

[1] Lov av 17. april 1970 om retten til oppfinnelser som er gjort av arbeidstakere
http://www.lovdata.no/all/hl-19700417-021.html
[2] Veiledning til NTNUs standardavtale om masteroppgave/prosjektoppgave i samarbeid med bedrift
http://www.ntnu.no/studier/standardavtaler

Selv om oppgaven er undergitt utsatt offentliggjøring, skal bedriften legge til rette for at studenten kan benytte hele eller deler av oppgaven i forbindelse med jobbsøknader samt videreføring i et doktorgradsarbeid.

5. Generelt

Denne avtalen skal ha gyldighet foran andre avtaler som er eller blir opprettet mellom to av partene som er nevnt ovenfor. Dersom student og bedrift skal inngå avtale om konfidensialitet om det som studenten får kjennskap til i bedriften, skal NTNUs standardmal for konfidensialitetsavtale benyttes. Eventuell avtale om dette skal vedlegges denne avtalen.

Eventuell uenighet som følge av denne avtalen skal søkes løst ved forhandlinger. Hvis dette ikke fører frem, er partene enige om at tvisten avgjøres ved voldgift i henhold til norsk lov. Tvisten avgjøres av sorenskriveren ved Sør-Trøndelag tingrett eller den han/hun oppnevner.

Denne avtale er underskrevet i 4 - fire - eksemplarer hvor partene skal ha hvert sitt eksemplar. Avtalen er gyldig når den er godkjent og underskrevet av NTNU v/instituttleder.

Hamar, 22.3.2013	Hedda Heier Haugen
sted, dato	student

Trondheim 3/6-2013	
sted, dato	veileder ved NTNU

Trondheim, 3/6-13	Monica Rafoss	
sted, dato	instituttleder, NTNU	institutt

Gjøvik 22/3-13	Einar Gjøvik
sted, dato	for bedriften/institusjonen stempel og signatur

STANDARDMAL

ved avtale om konfidensialitet mellom student og bedrift/ekstern virksomhet i forbindelse med studentens utførelse av oppgave (masteroppgave/prosjektoppgave) i samarbeid med bedrift/ekstern virksomhet, jf. punkt 5 i avtale om oppgave i samarbeid med bedrift/ekstern virksomhet. Malen er fastsatt av Rektor ved NTNU 29.08.2011.

AVTALE
mellom

Student ved NTNU: Hedda Heier Hansen	født: 27.08.86

Bedrift/ekstern virksomhet: Sweco Norge AS

om konfidensialitet.

1. Studenten skal utføre oppgave i samarbeid med bedrift/ekstern virksomhet som ledd i sitt studium ved NTNU.

2. Studenten forplikter seg til å bevare taushet om det han/hun får vite om tekniske innretninger og fremgangsmåter samt drifts- og forretningsforhold som det vil være av konkurransemessig betydning å hemmeligholde for bedriften/den eksterne virksomheten. Det er bedriftens ansvar å sørge for å synliggjøre og tydeliggjøre hvilken informasjon dette omfatter.

3. Studenten er forpliktet til å bevare taushet om dette i 5 år regnet fra sluttdato, jf. standardavtale om utføring av oppgave i samarbeid med bedrift/ekstern virksomhet punkt 1.

4. Kravet om konfidensialitet gjelder ikke informasjon som:
a) var allment tilgjengelig da den ble mottatt
b) ble mottatt lovlig fra tredjeperson uten avtale om taushetsplikt
c) ble utviklet av studenten uavhengig av mottatt informasjon
d) partene er forpliktet til å gi opplysninger om i samsvar med lov eller forskrift eller etter pålegg fra offentlig myndighet

23.2013 Hamar — Hedda Heier Hansen
sted, dato — student

22/3-2013 Gjøvik — Einar Rønvik
sted, dato — for bedrift/ekstern virksomhet
stempel og signatur

Preface

This case study report constitutes my master thesis for the Master of Science in Project Management at the Norwegian University of Science and Technology (NTNU).

I would like to take the opportunity to express my sincere gratitude to the individuals who have contributed to the completion of this case study. First and foremost, I would like to thank the respondents in the case company (Sweco Norway) for providing me with the valuable data that has formed the basis of the study's findings. I have truly enjoyed every interview, discussion and informal conversation that has taken place during the course of this study, and it is my hope that this case study will lead to a continued and fruitful discussion in regards to the interesting and important topic of quality management in the organization. I would also like to thank my supervisor, Tim Torvatn at the Department of Industrial Economics and Technology Management, for his valuable comments and guidance throughout the study.

Hamar, June 11th 2013

Hedda Heier Hansen

Abstract

Good and appropriate quality management is a necessity for achieving competitive advantage within most industries, including the engineering consulting industry. In this case study factors contributing to or hindering quality management system implementation success in Sweco Norge AS have been examined. The study has shown that the benefits that the organization wishes to achieve by system use, how the system is designed to achieve those objectives and how different mechanisms that promote system use are utilized in the company will have an effect on the degree to which the system is used, and thus on the benefits achieved. It has further been shown that there is a discrepancy between how Sweco Norge intends to use the system and how it is actually used in the organization's Hedmark-Oppland unit, and some reasons for this gap have been outlined. Finally, a framework based on change management principles has been developed that can be used by regional management to minimize this gap.

Sammendrag

God or hensiktsmessig kvalitetsledelse er en forutsetning for oppnåelse av konkurransedyktighet i de fleste industrier, inklusive industrien for rådgivende ingeniørvirksomhet. I denne case studien har faktorer som har bidratt til eller forhindret vellykket implementering av Sweco Norges kvalitetssikringssystem blitt undersøkt. Studien har vist at de gevinstene en organisasjon ønsker å oppnå ved bruk av systemet, hvordan systemet er designet for å oppnå disse målene og hvordan ulike mekanismer som oppfordrer til systembruk benyttes i bedriften vil ha en effekt på grad av bruk av systemet, og dermed på hvilke gevinster som oppnås. Det har videre blitt vist at det er en uoverensstemmelse mellom hvordan Sweco Norge ønsker å benytte systemet og hvordan det faktisk bruker i selskapets enhet i Hedmark-Oppland, og noen årsaker til denne uoverensstemmelsen har blitt beskrevet. Til slutt har det blitt utviklet noen rammer basert på endringsledelsesprinsipper som kan benyttes av ledelsen i regionen for å minimere denne uoverensstemmelsen.

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1 Introduction

In an increasingly competitive environment, companies need to continuously develop and refine the manners in which they satisfy stakeholder needs and gain competitive advantage. One aspect of business where such development has been rapid, where companies have seen increasing demands from stakeholders and where competition has been stiff is the level of quality of products and services. This has to a large extent been compounded by an increased global competition from Japanese manufacturers, who raised the bar for quality during the 1980's (Sandholm, 2005). Increasingly, the 'quality-movement' has also made its way into the service industries.

Quality is a cornerstone in achieving competitive advantage in engineering consulting industries because in these industries, customer satisfaction is the ultimate prerequisite for such advantage (Culp, Smith, & Abbot, 1993). Customer satisfaction can further be defined as a function of quality of service, quality of product and quality of manner to clients (Tang, Lu, & Chan, 2003, p. 166). Clearly, the management of quality, and thus achievement of customer satisfaction, is a complex and challenging task that these organizations must undertake in an effective and systematic manner in order to obtain differentiation from competitors.

The ISO 9000 family and the ISO 9001 certification

In order to provide organizations with a means of developing an effective quality management system and demonstrating the capability to obtain quality in products and services, the ISO 9000 family has been introduced. While ISO 9000:2005 describes the fundamentals and vocabulary of the ISO standards and quality management, ISO 9004:2009 provides an approach to using quality management as a means of achieving sustained competitive advantage. These standards can thus be defined as quality management system design standards and they are not used for certification purposes. ISO 9001:2008, on the other hand, provides a framework for certification of such systems, and is thus an assessment standard rather than a design standard.

In ISO 9000:2005, the eight quality management principles that form the basis of the requirements of ISO 9001:2008 are outlined. These are Customer focus, Leadership,

Involvement of people, Process approach, System approach to management, Continual improvement, Factual approach to decision making and Mutually beneficial supplier relationships. According to ISO 9000:2006 these *"can be used by top management in order to lead the organization towards improved performance"* (IOS, 2006, p. 5).

There has been, and still is, a vast and continuous academic discussion regarding whether ISO 9001 certification produces benefits for the certified organizations or not, as well as in regards to which types of benefits it may produce. While the International Standards Organization is careful not to make explicit claims for performance improvements, third party accreditation bodies tend to promise performance benefits such as lower costs and increased market share. (Dick, 2000, p. 366). Numerous attempts have been made to determine whether there is a link between ISO 9001 certification and performance benefits. While a definitive answer to that question has not been provided, there are several authors who note that while adequate quality management practices tend to lead to improved performance, ISO 9001 certification does not necessarily have the same effect. Consider the following conclusion made by Dick (2000), after a review of literature pertaining to the issue:

"It is clear […] that better quality does have a consistent positive relationship with improved business performance. […]The research indicates that factors that are essential to quality assurance system, such as effective process control, quality control and better conformance quality, are linked to better business performance. However, the research shows that firms who have the quality certificate, and hence an approved quality assurance system, do not show any consistent business performance gains. Combining these findings lead to the inference, that quality certification is not consistently associated with having a quality assurance system that delivers improved process control, quality control or better conformance quality."

Similarly, Iden (2011) researched whether the documentation of processes in a quality management system led to process management in Norwegian companies. He found that the investment in such a system (certified or not) did not lead to extensive process awareness for management or employees; did not lead to the establishment of process ownership; did not lead to a perception of the documented work processes

as an important part of the system for objectives achievement and results measurements; and did not lead to the establishment of a praxis of continuous process improvement.

In other words, establishing a quality management system or having such a system subjected to certification does not necessarily lead to better process management or improved business performance. Instead, what matters is what the organization is trying to accomplish by system establishment, how they design the system to achieve those objectives and whether they actually utilize the system to accomplish them.

This study, therefore, attempts to investigate into how the case company (Sweco Norway AS) has intended to use its system, how it is designed and to what extent it as used as intended. Furthermore, attempts are made to examine the reasons for system use not being performed as intended. Finally, a framework for increasing system use based on change management principles is proposed.

Sweco‘s management system is ISO 9001 certified (in addition to ISO 14001 and OHSAS 18001 certified). According to Kvalex, the official ISO-guide for Norwegian businesses, there are 87 businesses that hold the ISO 9001 certification within the industries in the ‘architectural services and technical consulting services’ (KvaLex, 2013). Moreover, it is reasonable to believe that numerous businesses in these industries have certifiable systems. For example, both Multiconsult, Norconsult and Cowi (which are all central competitors to Sweco) market their quality management system as meeting the requirements of ISO 9001. Therefore, although the findings of this study cannot be directly generalized beyond the case company, they can be of relevance to those trying to understand the mechanisms that affect quality management system implementation and use in other companies in the industry as well.

2 Introduction to the case company and problem statement

2.1 Sweco Norway and its quality management system

Sweco Norway is the Norwegian subsidiary of Sweco Group, which has its corporate headquarters in Sweden. In addition to Sweden and Norway, the group also has subsidiaries in Finland and Russia, as well as in several other locations in Eastern and Central Europe. Sweco Group has a total of approximately 7800 employees.

Sweco Norway has 30 offices across the country and approximately 1200 employees. The company offers consulting services within the areas of Building and Construction, Energy, Geographic IT, Urban planning and Architecture, Project Administration, Transportation Engineering, Technical Installations, Water and Drainage and Environmental consulting.

Sweco's quality assurance system (or the Management System, as it is called by the organization) is ingrained in a web based platform called sweco@work that is accessible through the company's intranet. Although sweco@work maintains both quality management and environmental management in the organization, the emphasis of this paper is on the quality management aspect of the system. The system consists of three main processes: the assignment process, supporting processes (which include the company's organizational charts and information about sweco@work) and the business development process (which includes policies, objectives, internal audits and management review). The assignment process is illustrated by the arrow in Figure 1.

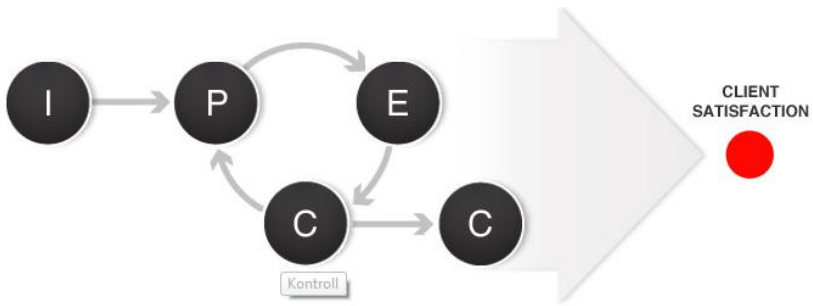


Figure 1 The assignment process of Sweco's quality management system (Sweco Norge AS, 2011)

As the arrow indicates, the assignment process is divided into five phases: initiation (I), planning (P), execution (E), control (C) and close (C). Accompanying each phase is a set of routines, manuals and tools. For the assignment process, each phase has a set of mandatory documentation requirements, which are summarized in a Quality Control Plan for the assignment manager. The quality management system is further described in section 6.3.

2.2 Problem statement

In this case study, the problem statement, or the study questions, arose from several observations that the researcher did while interning in Sweco during the summer of 2012. One of the researcher's work tasks at that time was to aid the development of a one-hour seminar that was meant to give participants a better understanding of the QA-system. The backdrop of this development was that the management in the region Hedmark-Oppland acknowledged a need for better implementation of the system. While preparing the seminar, the researcher had informal discussions with several employees in order to uncover issues that needed to be addressed. These discussions revealed that the system was seen by many as complicated, overly comprehensive and difficult to use. Comments and discussions that arose during and after the seminars confirmed that many felt like they lacked both the knowledge and motivation to use the system. Moreover, while the seminars were well received, they did not produce significant changes in the way people utilized the QA-system. This lack of change caused the researcher to take an interest into how the system implementation could be improved, and thus to develop the study questions of this study.

The problem statement of this study can be illustrated by Figure 2. The purpose of the study is to explore how the organization wishes to utilize the quality assurance system (QA-system vision), how the system is used in praxis in the region of Hedmark and Oppland (QA-system status), whether or not the use of the system is aligned with how it is intended to be used (the "gap"), and possible reasons for this con-compliance. Ultimately, this analysis will lead to a framework that may be used to minimize this gap. In short, the objective of the study is to detect a possible improvement potential for system use and to provide some tools for improvement. The problem statement is further elaborated below:

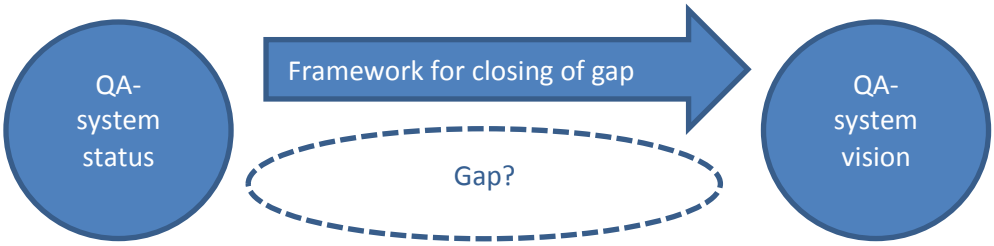


Figure 2 Problem statement

2.2.1 QA-system vision

The QA-system vision is the starting point for assessing the improvement potential for system use. In addition, as will be shown in later sections of this report, the purpose and manner of system development and implementation are factors that are likely to moderate system use. In short, the QA-system vision can be defined as how the organization wishes to use the system, and to what end. Aspects of the vision include motivation for system development and ISO 9001 certification, management commitment, expected benefits of use, implementation strategy, system constituents and fit with strategic objectives. The study questions associated with QA-system vision can therefore be formulated in the following manner:

1. ***What is the QA-system vision?***
    a. *What is the motivation behind the system?*
    b. *What are the expected benefits of use?*
    c. *What is the level of ambition for system use?*
    d. *How does the system fit into the strategic objectives of the company?*
    e. *How is the system built up and which components does it contain?*
    f. *How is the system implemented in the organization*

2.2.2 QA-system status

Another important aspect in exploring improvement potential for system use is QA-system status in assignments. Aspects of the status include how often the system is used, how it is used and when it is used. The study questions associated with QA-system status can be formulated in the following manner:

2. ***What is the QA-system status in the region?***
    a. *How often is the system used in assignments?*
    b. *How is the system used in assignments?*
    c. *When is the system used in assignments?*

While the QA-system vision is analyzed on both a national and regional level, the QA-system status is measured and analyzed on a regional level in Hedmark-Oppland.

2.2.3 The gap between vision and status and reasons for non-compliance

First, this study aims to uncover whether or not there is a discrepancy between QA-system vision and status. Second, given that there is such a gap, the study aims to explore the reasons for this gap. There may be several reasons associated with a number of different issues such as lack of system knowledge and motivation. The study questions associated with non-compliance and the reasons for such are:

3. ***Is there a discrepancy between QA-system vision and status?***
4. ***What are the reasons for this discrepancy?***

2.2.4 Framework for improving QA-system use

The final goal of this study is to develop a framework of principles that may be used to improve QA-system use, based on findings of the previous four study questions. The final study question is therefore:

5. ***How can QA-system use be improved?***

3 Methodology

In this chapter, the methodology of the study is outlined and discussed with regard to case study design, development of study questions and propositions, data collection methods and data analysis methods. In order to develop an explanation of the rationale behind the methodology, this introductory section to the chapter will deal with the criteria for good research designs.

The concepts of reliability, construct validity, internal validity and external validity (see table 1) are common criteria for evaluating the correctness and application of various research designs.

Construct validity	Identifying correct operational measures for the concepts being studied
Internal validity	Seeking to establish a causal relationship, whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships
External validity	Defining the domain to which a study's findings can be generalized
Reliability	Demonstrating that the operations of a study – such as the data collection procedures – can be repeated, with the same results

Table 1 Criteria for judging the quality of research designs (Yin, 2009, p. 40)

Yin suggests a number of tactics to address the reliability and validity of case studies (see table 2). Several of these tactics have been used in the present study, as will be outlined in the previous sections. The tactics that are used are underlined in the table.

TESTS	Case Study Tactic	Phase of research in which tactic occurs
Construct validity	• Use multiple sources of evidence	Data collection
	• Establish chain of evidence	Data collection
	• Have key informants review draft case study report	Composition
Internal validity	• Do pattern matching	Data analysis
	• Do explanation building	Data analysis
	• Address rival explanations	Data analysis
	• Use logic models	Data analysis
External validity	• Use theory in single-case studies	Research design
	• Use replication logic in multiple-case studies	Research design
Reliability	• Use case study protocol	Data collection
	• Develop case study database	Data collection

Table 2 Case study tactics for Four Design Tests (Yin, 2009, p. 41)

3.1 Case study design

According to Yin (2009, p. 8), the case study is the appropriate research method when the research questions are in "why" and "how" form, when the investigator is unable

to exert control over behavioral events and when the investigation focuses on contemporary events. This research project poses questions such as “how does the quality assurance system in Sweco work?” and “why do employees sometimes choose not to use the system?”. Furthermore, the researcher cannot control behavioral events and the investigation focuses on contemporary events. Hence, the case study method can be deemed appropriate.

The present case study attempts to uncover how Sweco’s quality management system is meant to be used, and how it is actually used. The study is therefore mostly of a descriptive nature. The study also outlines some possible reasons for noncompliance with the system, which indicates an explanatory approach. However, these reasons are stated based on a combination of theoretical underpinnings and statements made by respondents in the study. This method provides a certain likelihood that the reasons for noncompliance are at least partly realistic for the company in question. However, inferences regarding general reasons for lack of quality system compliance cannot be made. Thus, the study is mostly descriptive.

A central question in case study design is whether to perform a single-case or multiple-case study (see figure 3). Generally, the multiple-case design is preferred over the single-case design because multiple cases give the opportunity of direct replication of results, and thus a more powerful conclusion and increased external validity (Yin, 2009, pp. 41, 61). However, the single case is appropriate under certain conditions (Yin, 2009, p. 47), including when the case is a representative or typical case. Sweco is one of several large consulting companies in Norway, with similar employee demographics and project assignments to most of its main competitors. It is also reasonable to assume that other consulting companies have quality management systems that are built on more or less the same premises as Sweco’s system. Therefore, it can be argued that Sweco’s QA-system is a representative or typical case. Moreover, multiple-case designs require more resources. Because of the limited time frame for this project, the researcher had to make a choice between an in-depth single-case study and a more superficial multiple-case design. In addition, the researcher’s previous relation to Sweco gave a unique opportunity to gain insight into the inner workings of the company. Therefore, the obvious choice became the single-case study.

Another issue in case study design is defining the unit(s) of analysis (see figure 3). In this research project, the main unit of analysis is Sweco's quality management system. However, it can be argued that there are several related and embedded units of analysis, of which the most important are: Sweco's organizational structure, strategy, values and culture, and the employees' perceptions of quality management and the QA-system.

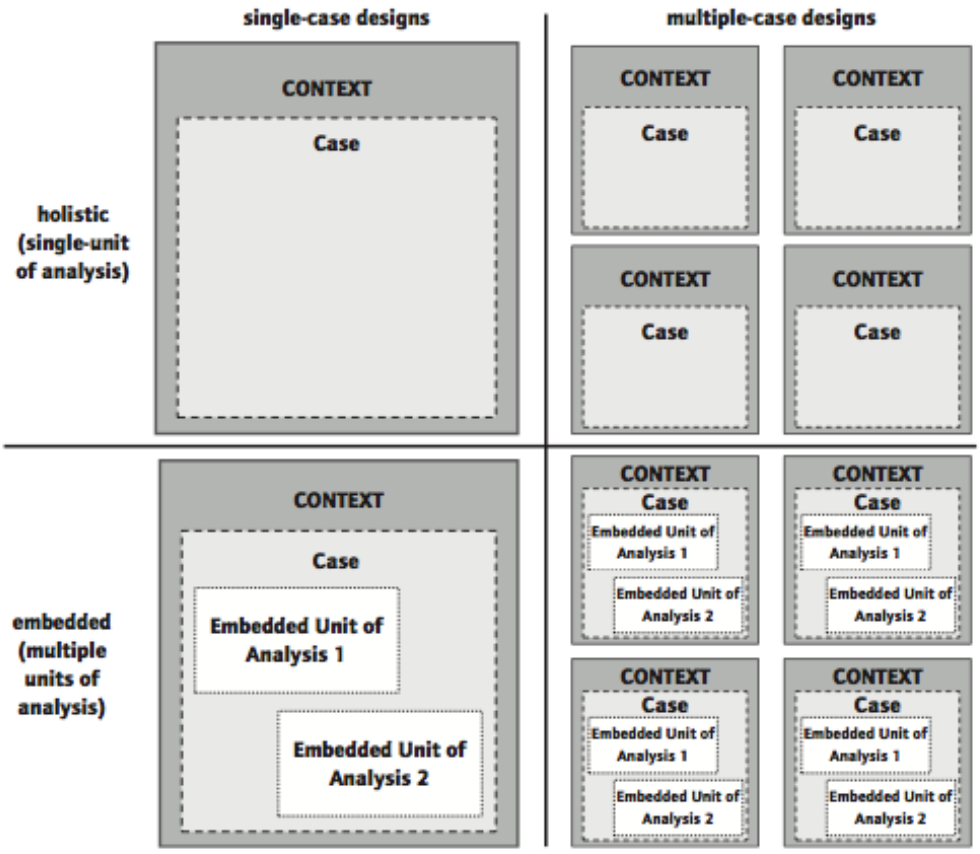


Figure 2.4 Basic Types of Designs for Case Studies
SOURCE: COSMOS Corporation.

Figure 3 Basic Types of Designs for Case Studies (Yin, 2009, p. 46)

In addition to the choice between single or multiple cases and between an embedded or holistic design, the case study design also includes the following components: the study questions, the propositions, the logic linking of the data to the propositions and the criteria for interpreting the findings (Yin, 2009, p. 27). Yin (2009, p. 79) insists that a Case Study Protocol is developed to deal with these components and to guide the

researcher through the collection and interpretation of data. Such a protocol, in which the researcher documents the research procedures of the study, increases the study's reliability. In this project, the Case Study Protocol accounted for study questions, propositions, research questions, data collection methods, data analysis methods and guidelines for the project report. How these components were developed is described more in detail in the following sections. The protocol was used throughout the study as a dynamic document which has been reviewed frequently and altered several times. As such, it has been an important tool during the entire course of the study.

3.2 Development of study questions, propositions and research questions

Study questions, or the problem statement, are the overarching questions that conceptualize what the study aims to investigate, while the propositions are an operationalization of the study questions. Research questions are the specific questions that are based on the propositions and that the researcher bears in mind during the investigation. In this study, the case study protocol accounted for all three components. The origins of the study questions were outlined in section 2.2.

Observations prior to case study startup

In addition to the observations outlined in section 2.2, the researcher has also had several informal discussions with the person responsible for quality assurance follow-up in Sweco's office in Hamar. Moreover, the researcher has spent a considerable amount of time trying to learn and understand the QA-system. Together, all of these observations have been the formed the basis of the propositions stated in this study.

Literature review

At the beginning of this case study, a literature review was conducted on topics such as SO 9001 implementation, quality management, Total Quality Management, quality system success factors, motivational theory, change management and customer satisfaction. The findings of this review were then combined with the observations previously mentioned to form the propositions of the study. That way, the

propositions are grounded in theory, but adapted to the researcher's previous knowledge regarding the situation in Sweco and in the region.

For single-case studies, external validity relies on the use of theory (see table 2). Thus, where generalizations are made from this study, they will be based on theoretical findings. Moreover, theory is also a central part in explanation building in data analysis, which increases internal validity. In order to ensure that relevant theory was used, short abstracts (including notes on possible applications) of the books and articles studied was written and stored in the Case Study Database (see table 2).

In order to be able to investigate into whether the propositions of this study were correct, a number of research questions were developed. In the case study protocol, the possible sources of answers to these questions were also listed. The research questions will not be further accounted for, but the example below demonstrates how the propositions, research questions and possible sources of information are linked in the protocol:

Proposition: *The motivation for certification and system implementation in Sweco is a mix of internal and external motivation* Research question: *What was/is the motives for system implementation? (Sources: personnel in the QA function, sweco@work, management)*

This link is an important part of establishing and maintaining the chain of evidence (see table 2).

The above outline of how the study questions and propositions of this study were developed, demonstrate that the researcher had a significant amount of insight into the issues pertaining to quality management in Sweco already before the study was initiated. This meant that the researcher was able to pose detailed study questions and propositions already at an early stage. On one hand, this is an advantage because it provides the opportunity to investigate those study questions and propositions thoroughly despite a limited amount of resources. On the other hand, an early detailing of questions and propositions may cause the researcher to omit the search for other possible issues and explanations, or even to ignore signs of such alternative findings. This well-known phenomenon, called experimenter's bias or research bias (Wikipedia, 2013), may impede both the reliability and validity of a study because the

researcher will tend to seek confirmation of his preconceived beliefs. In this case, these issues were dealt with by several means. First, reliability was ensured by use of an extensive case study database, which contained the transcribed interviews and a literature overview. By using open-ended questions and encouraging respondents to speak freely and to bring up issues that had not been covered by the questions asked, the interviews provided a great deal of information that was not anticipated by the researcher beforehand. Thus, the researcher has been able to review interviews and other sources to search for possible alternative issues and explanations. Second, the study has used a number of different sources of evidence, which increases construct validity. By reviewing a vast set of documents in Sweco's website before the interviews, the researcher has been able to uncover many different aspects of the system and its use. Finally, because the observations that lead to this study were many, diverse and frequent, the researcher feels quite confident that the most important aspects or issues pertaining to the study questions have been covered.

3.3 Data collection methods

Three data collection methods have been used in the present study: documentation, interviews and observation:

3.3.1 Documentation

During the design and execution of this study, Sweco's quality management system, sweco@work, has been an essential source of information. The system contains vast amounts of information about the quality system, as well as about Sweco's organizational structure, objectives, strategy and policies. Understanding the quality system is of utmost necessity in order to develop and ask informed questions during interviews, and to make sense of the answers given. The detailed insight into the system has, as explained in a previous section, enabled the development of detailed propositions and research questions.

Other documentation sources used include the remainder of Sweco's intranet and Sweco Norway's and Sweco Group's public web sites, as well as documentation in assignment folders in Sweco's server.

These documentation sources has mainly provided information about the QA-system vision (such as the how the system works, the objectives that are developed etc.), as well as some information pertaining to QA-system status (such as internal audit reports).

The documentation used in this study has mainly been written with the purpose of information dissemination, either to external actors or to the organization's employees. For documentation written for a public audience (such as information given on Sweco's home page) there is a probability that the information is given largely for marketing purposes. Care must therefore be taken by the researcher to keep in mind that this information may not give an accurate description of the inner workings of the organization. This can also be said for the documentation written for employees, because it is quite possible that it is written with an agenda such as to promote system use or to strengthen employee morale.

3.3.2 Interviews

During the execution of the present study, a total of 15 interviews have been completed. In order to have a wide range of sources (which increases construct and internal validity, see table 2), respondents have been chosen from different levels in the organizational hierarchy as well as from different academic disciplines and geographical locations in Norway. Specifically, top management represents a larger geographical diversity than middle management, group mangers and assignment managers. This is because the QA-system vision is addressed on both national and local level, while QA-system status is addressed on a local level alone. Table 4 provides the list of interview respondents.

In Sweco, most of middle management spends a considerable amount of their time working in assignments. Therefore, in addition to having more extensive knowledge of how Sweco is managed and led, most of the managers interviewed also have first-hand knowledge about how the system is used in assignments.

Title	Comments
President of Sweco Norway	
QA-leader in Norway	Defined as part of top management in this study
Division manager, Building & Construction	Defined as part of top management in this study
Divisional QA-coordinator, Building & Construction	Defined as representative of QA-function in this study
Divisional QA-coordinator, Water, Planning & Transportation	Defined as representative of QA-function in this study
Office QA-coordinator, Hamar	Defined as representative of QA-function in this study
Regional Manager, Hedmark-Oppland	Defined as middle management in this study
Office Manager, Hamar	Defined as middle management in this study
Office Manager, Gjøvik	Defined as middle management in this study
Group leader, Building Service Systems, Hamar	
Group leader, Building & Construction, Hamar	
Group leader, Building & Construction, Hamar	
Assignment manager, Hamar	
Assignment manager, Hamar	
Assignment manager, Lillehammer	

Figure 4 Interview Respondents

The interviews were semi-structured. Most of the questions were prepared beforehand but issues that came up during interviews often led to follow-up questions as well. Prepared questions were developed based on the research questions of the Case Study Protocol and then tailored to the different positions of the respondents. The purpose of this was to shed light on the same issues from different angles. For example, a middle manager could get the question *"how do you work to convey expectations for system use?",* while assignment managers would be asked *"do you perceive that there is an expectation for you to use the system?".* In total, 8 tailored interview guides were developed: for the president, for the QA-leader, for the division manager, for the divisional QA-coordinators, for the local QA-coordinator, for middle managers, for group managers and for assignment managers. At the end of each interview, each respondent were explicitly given the chance to bring up issues that had

not been covered. In addition, the questions were generally quite open-ended, which generated variety in the responses. As explained in a previous section, this ensured that important issues were not missed despite the quite detailed nature of the propositions. Interviews lasted between 30 and 75 minutes.

The reliability of interview findings was ensured by two means. First, interviews were recorded and transcribed (with the exception of one interview) and stored in the case study database. Second, the Case Study Protocol was an essential aid in preparing for the interviews. The protocol was used both as a basis for drawing up interview questions and as a tool for reviewing study questions and propositions right before going into an interview.

Because the researcher had previously participated in work tasks pertaining to quality management in the company, there was a risk of decreased reliability of the interview findings. First, there was the chance that respondents would withhold information because they associated the researcher with the QA-system and therefore did not want to openly criticize the system and related aspects, or that they did not wish to expose that they lacked knowledge of the system and its use. Second, there was the chance of response bias (Wikipedia, 2013), which is the respondent's tendency to give the answer that he thinks the questioner wants. These issues were in some cases dealt with by emphasizing that the researcher wanted the respondent's subjective opinion and that there were no right answers. Second, the researcher has been careful to emphasize her role as a student, as opposed to employee, during the interviews.

The interviews gave information about QA-system vision, QA-system status and possible reasons for non-compliance.

3.3.3 Observation

The researcher of this study has been a summer intern and part-time employee in Sweco's Hamar office since March 2012. During the period leading up to the present study, the researcher did a number of observations which became the basis for the study questions and propositions.

During the study execution, the researcher has been present in Sweco's Hamar office on a daily basis and has therefor been able to observe and participate in everyday discussions or comments pertaining to quality management. This discourse has provided a general insight into the QA-system perceptions in the office. The researcher has also observed a few office-level internal audits, which have given information about both compliance status and reasons for non-compliance.

3.3.4 Yin's three principles of data collection

According to Yin (2009, p. 114), there are three principles of data collection that "can help to deal with the problems of establishing the construct validity and reliability of the case study evidence". These are using multiple sources of evidence, creating a Case Study Database and maintaining a chain of evidence. As can be seen from the previous discussion, all three principles have been central during the design and execution of the present study.

3.4 Data analysis methods

This section describes the data analysis strategies and technique used in the present study.

3.4.1 Data analysis strategies

Yin (2009, pp. 130-136) proposes four data analysis strategies that may be used as basis throughout the design and execution of a case study: relying on theoretical propositions, developing a case description, using both qualitative and quantitative data and examining rival explanations. All four strategies are relevant to the present study.

The propositions have been a guiding tool throughout this study. They have laid the groundwork for both data collection and data analysis. The propositions were developed based on previous observations and on the literature review, and have formed the basis for collection and analysis of findings pertaining to all aspects of the study questions (QA-system vision, QA-system status and reasons for non-compliance).

The study question concerning QA-system vision requires a descriptive approach in which the system and its objectives are outlined and explained. This is also somewhat the case for QA-system status.

Like propositions, the awareness of possible rival explanations has also been accompanying the collection and analysis of data throughout this study. This is especially true for the study question regarding reasons for non-compliance, where some tentative causal assumptions are drawn. Addressing rival explanations is one of Yin's tactics for improving internal validity (see table 2).

The present study includes only a small set of quantitative data. A small sampling of assignment folders has been performed in order to give a general assessment of QA-system compliance. How assignments were sampled and used is further explained in chapter 5. The results of this sampling were used to validate qualitative findings.

3.4.2 Data analysis techniques

Yin (2009, pp. 136-158) suggests five analytic techniques: pattern matching, explanation building, time-series analysis, logic models and cross-case synthesis.

Explanation building has been the primary data analysis technique of this study. For the most part, explanation building has been performed in a narrative form, in which descriptions of how different mechanisms and issues may have influenced system use has been outlined. According to Yin (2009, p. 141) *"the better case studies are the ones in which the explanations have reflected some theoretically significant propositions."* In this case study, explanation building has been used to verify or dismiss the propositions developed from prior observations and the literature review. In praxis, this was done by using a spread sheet, where propositions and related findings (supportive or dismissing) were outlined. Yin (2009, p. 144) further argues that in order to safeguard the validity and reliability of explanation building, the researcher should rely on the use of a Case Study Protocol, the use of a Case Study Database and the following of a chain of evidence. As previously mentioned, these principles have been used throughout this study.

During data analysis, additional literature was sought out to explain the findings where appropriate.

3.5 Limitations

Generally, the author feels that the methodology of this case study finds both its strengths and its weaknesses in the integration of the researcher into the case organization that has taken place both prior to and during the study.

This integration has been a strength because it has provided the researcher with the opportunity to both observe and participate in the daily life in one of the organization's offices. Thus, it has been possible to gain insight into subtler information that might be relevant to the study at hand, it has been quite easy to get access to both documentation and respondents and it has given the researcher a broader set of data than would be obtainable otherwise.

On the other hand, the close relationship between the researcher and the organization entails challenges, especially in regards to reliability. First and foremost, it has been challenging to separate between the researcher's more personal opinions and experiences and the more objective interpretation of data. Furthermore, the researcher has needed to spend a considerable amount of time considering the political effects of this study. Studying organizational behavior is largely concerned with studying individual behavior. Because the case company has also been the researcher's employer, it is only natural that there is some element of fear of stepping on somebody's toes. It has throughout this study been the researcher's intent to accurately describe findings, but to do so in a way that does not cause harm to members of the organization. Finally, it may have been difficult for respondents to distinguish between the researcher's 'student' role and her role as colleague.

The second biggest challenge during this research project has been dealing with the plurality of the inner workings of organizations. The fifteen respondents to this study have more or less painted fifteen different pictures of the case company. Drawing conclusions from such a data set has required great effort to look for tendencies and commonalities, as well as to shed light on differences. A larger set of respondents might have made these commonalities and differences more clear cut. Furthermore,

using more quantitative data, such as surveys, could have shed further light on whether the interview data reflected common opinions in the organization.

Finally, despite treating the region in Hedmark-Oppland as one unit in this study, the data, especially that obtained by interviews, has predominantly originated from the Hamar-office, where the researcher has been located on a daily basis. Therefore, it cannot be said with certainty that the findings are completely representative for the entire region. Therefore, a more balanced group of respondents would have been desirable.

4 Theoretical background and presentation of propositions

In this chapter, the theoretical underpinnings of the study will be outlined. Together with the observations made prior to this case study, these underpinnings have resulted in the case study propositions.

4.1 QA-system status

One of the goals of this case study is to reveal the status of QMS use in the region Hedmark-Oppland. Although the system can be said to describe and regulate several of the firm's business processes, the assignment process is perhaps the one that is best described by the system. Furthermore, it is the sub-processes and activities within this process that the employees of the organization perform most frequently on a daily basis. Therefore, the status examination of this case will primarily be focused on whether or not the assignment process is performed as described and required in the quality system.

Measuring the quality management system use has been difficult for several reasons. First and foremost, it is challenging to define what constitutes system use. In section 6.3, it will be described how the QMS consists of both mandatory routines and documentation requirements and optional, but helpful, tools. One of the simpler aspects to measure is whether or not the Quality Control Plan (which is a check list that summarizes the documentation requirements of the assignment process) is used in projects or not. The frequency with which employees use the intranet-based quality management system, sweco@work, as a whole, however, can only be determined by asking respondents themselves. Therefore, based on observations made prior to the startup of this case, the following propositions can be stated for the QMS use in assignments in Sweco's Hedmark-Oppland region:

Proposition 1: The Quality Control Plan is relatively seldom used

Proposition 2: Employees use the intranet (Sweco@work) quite randomly

4.2 QA-system vision and possible reasons for lack of system use

In order to assess whether or not there is a discrepancy between how the organization wishes to use the quality assurance system and how it is actually used, the QA-system vision needs to be uncovered. Furthermore, the QA-system vision is not merely a baseline for determining whether or not there is such a gap. In fact, research has shown that factors such as motivation for system implementation, level of ambition and expected benefits that form the basis of a quality system has a significant impact on whether or not the quality system will produce benefits such as performance improvement or not. Furthermore, the vision includes implementation success factors such as management commitment and management of individual performance. Thus, aspects of the QA-system vision will reveal possible explanations for non-compliance with the system.

4.2.1 Motivation for system implementation

In reviewing literature that discusses issues such as ISO 9001 implementation success and TQM (Total Quality Management) benefits, it soon becomes evident that the motivation behind certification or system implementation is a central moderating factor in achieving the intended and anticipated results.

Motivations for ISO 9001 certification are usually categorized into external or internal factors. External motives often mentioned include sales and marketing purposes or customer pressure (Kaziliunas, 2010; Kim, Kumar, & Kumar, 2011). Internal motives, on the other hand, include; quality-related factors, such as improving product/service quality or devopling standardized procedures; operations-related factors, such as improving organizational efficiency or reducing costs of failures or costumer compliants; and competitiveness-related factors, such as differentiating with respect to competitors, building a specific type of organizational culture or managing employees' knowledge (Kim et al., 2011, p. 401).

Prajogo (2011) ascribe three major strategic roles to the motives in ISO 9000 adoption: goal, driver and context. As strategic goals, the motives reflect the objectives that the organization is pursuing by seeking certification, which can be internally or externally

oriented. As drivers, the motives, internal or external, will have an effect on how the organization chooses to implement the standard. Finally, as context, the motives, which reflect the organization's strategic orientation, may have a moderating effect on the relationship between quality certification and business performance because there may or not be a fit between motives and implementation tactics. The author goes on to show how internal motives have a positive relationship with operational performance, have a positive relationship with the implementation process, and strengthen the relationship between the implementation process and operational performance. External motives, on the other hand, had a less significant positive relationship with the implementation process. Furthermore, external motives tended to waken the relationship between implementation process and operational performance. Thus, internal motives, compared to external motives, generally led to better implementation processes and increased benefits in terms of operational performance.

This link between motivation, implementation and performance is also supported by other authors (e.g. Dick, 2000; Iden, 2011), and these effects may be illustrated by the following quote (Kaziliunas, 2010, p. 78):

> *"When firms simply react to external pressures for getting certified, they may consider ISO 9000 certification as a prime goal in itself, adopt a minimalistic approach to achieving it and thus achieve limited internal performance improvements."*

Knowing what a substantial role the motivation for certification and system implementation can play for implementation success and achievement of benefits, it is important to investigate into Sweco's motives for system implementation. Therefore, based on the theoretical underpinnings described above and on observations made in the organization prior to the present case study, the following proposition is posed:

Proposition 3: The motivation for certification and system implementation in Sweco is a mix of internal and external motives.

4.2.2 Expected benefits

A concept tightly coupled with motivational factors, is the range of benefits that the organization seeks to obtain by developing and implementing a quality system or by adopting a quality management standard.

Like motives, expected or desired benefits can be internally or externally oriented (Poksinska, Dahlgaard, & Antoni, 2002). Similarly, according to Hoyle (2011), consultation of the ISO 9000 family is driven by either a need for improvement in performance or a need for demonstration of capability.

Given that motivation for certification and system implementation has proven to have a moderating effect on implementation success and on performance outcomes, it can be argued that expected or desired benefits will be of similar importance. It is therefore necessary to also explore the benefits that Sweco seeks to obtain by its system. Based on observations made in the organization prior to the start-up of this case study, the following proposition is stated:

Proposition 4: Expected benefits of use of Sweco's quality management system include better financial control of assignments, clearer and more explicit understanding of customer requirements and expectations, increased customer satisfaction, better schedule control, better control of environmental issues, fewer deviations from regulations/standards/requirements, more contracts awarded, better process management and better reputation.

4.2.3 Quality management system design

The motivation for developing a quality management system and the benefits an organization wishes to obtain by implementing it will affect how the system itself is designed. Like the quote by Kaziliunas in section 4.2.1 indicates, an organization may choose to develop and implement a system that merely meets the requirements of a standard such as ISO 9001, so that the certification can be referred to for marketing and sales purposes. Similarly, Holye writes (2011, p. 101):

> *"In [a documented system established to meet the requirements of ISO 9001 on the demand of customers or the market] there are likely to be no processes beyond those specified in ISO 9001 and within those processes no activities that could not be traced to a requirement in ISO 9001"*

Hoyle problematizes this practice of making the certification a goal in itself by quoting Seddon (2000, cited in Hoyle 2011, p. 93), who claims that:

> *"People cheat, they do what they need to do to avoid the feared consequence of not being registered."*

According to Hoyle (2011, p. 81), what he denotes *implementing* the ISO 9001 standard (meaning that an organization picks up the standard and does what it is required) is less effective than first *consulting* the ISO 9000 standards, establishing a management system that enables the organization to fulfill its goals and then finally assessing the system by doing what he denotes *applying* the standard. If the goals of an organization in developing and implementing a quality management system are of an external orientation (that is, driven by external pressures), simply creating a system that adheres to the requirements of ISO 9001 may be sufficient in order to reach those goals. If the objectives are internally driven, however, the quality management system should be designed based on the organization's inherent processes and challenges.

Hoyle (2011, pp. 111-135) uses systems theory to argue that a management system, such as a quality management system, is neither a set of rules, a set of documents, nor a set of tools. Instead, the management system is "*formed from a set of interacting processes designed to function together to fulfill a specific purpose"* (Hoyle, 2011, p. 117), the key words being *processes* and *purpose* (recall that ISO 9000:2006 emphasizes 'System approach to management' and 'Process approach' as two of eight quality management principles). Designing a system based on ISO 9001 requirements, rather than strategic objectives, will lead to an emphasis on satisfying them rather than on achieving the objectives, which will lead to the flawed approach of treating the quality management system as something that is separate from the business (Hoyle, 2011, p. 98). Moreover, Hoyle argues that the quality management system must be seen as an inherent part of the organization's business management system (BMS),

which is the complete system through which the organization achieves its business objectives. The difference between viewing the quality management system (and other management systems such as those for environmental objectives etc.) as separate from the business and viewing it as part of the business management system can be illustrated by the figures below.

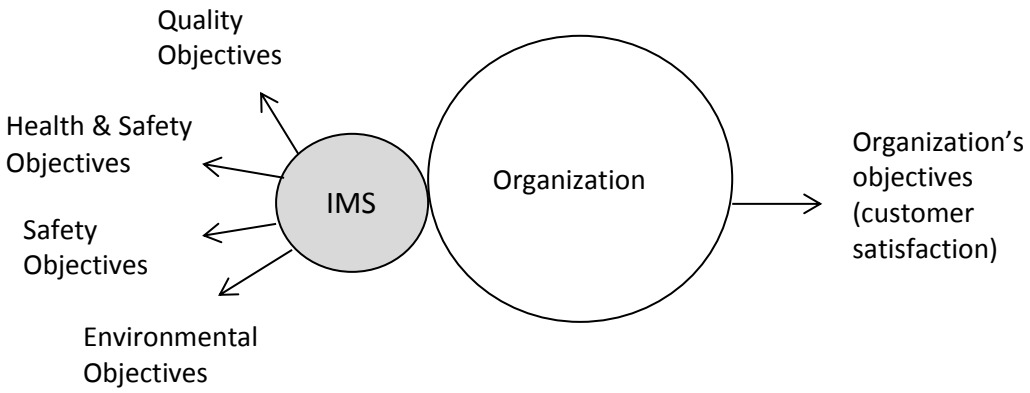


Figure 5 Integrated business system (IMS) separated from business (Hoyle, 2011, p. 127)

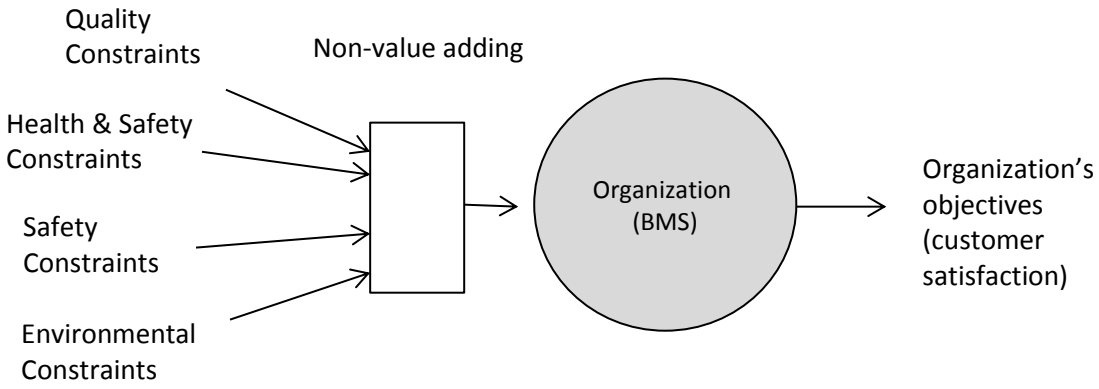


Figure 6 Fully integrated organization (Hoyle, 2011, p. 128)

The principle of treating the quality management system as a part of the BMS corresponds with the systems approach to management principle in ISO 9001:2008 (IOS, 2008). Furthermore, the notion that lack of integration between quality management and everyday business practices can lead to failure of quality system implementation is well established in literature (e.g. Soltani & Wilkinson, 2010, p. 368). By equating the BMI, which contains the quality management system, with the organization itself, Hoyle argues that the common mistake of treating the quality

management system as something separate from the business is eliminated (Hoyle, 2011, pp. 103, 196).

Because truly effective quality management systems are designed based on the principles above, it is useful to examine whether or not Swecos QA-system is designed as an integrated part of the organization's business management system or not. Based on observations made in the period of time leading up to the present case study, this yields the following propositions:

Proposition 5: Sweco's quality management system is designed on the basis of the organization's inherent processes and challenges. As such, it exceeds the bare minimum of the ISO 9001 requirements.

Proposition 6: However, the system is frequently seen as something "extra" to the organization's business activities. This indicates that the system in not an accurate model of how the organization functions and that the quality management system does not equal the business management system.

Going further into the notion of the organization as a system of processes, Hoyle identifies four generic business processes, which are the processes that are determined by looking at the organization as a whole and asking the question "what outputs will our stakeholders look for as evidence that their needs are being met?". The answers to that question will the objectives of the organization, as well as the outcomes or objectives of the four generic business processes: Mission management, Demand creation, Demand fulfillment and Resource management (Hoyle, 2011, p. 135). These processes can be characterized by having the same stakeholder at the input and output end (see table 3). Together, these processes form a generic model of the business management system and thus the organization (see Figure 77).

Business process	Input stakeholder (inputs)	Output stakeholders (outputs)
Mission management	Investors, Owners (vision)	Investors, Owners (mission accomplished)
Demand creation	Customer (need)	Customer (demand)
Demand fulfillment	Customer (demand)	Customer (demand satisfied)
Resource management	Resource user (resource need)	Resource user (resource satisfies need)

Table 3 Business process stakeholders (Hoyle, 2011, p. 151)

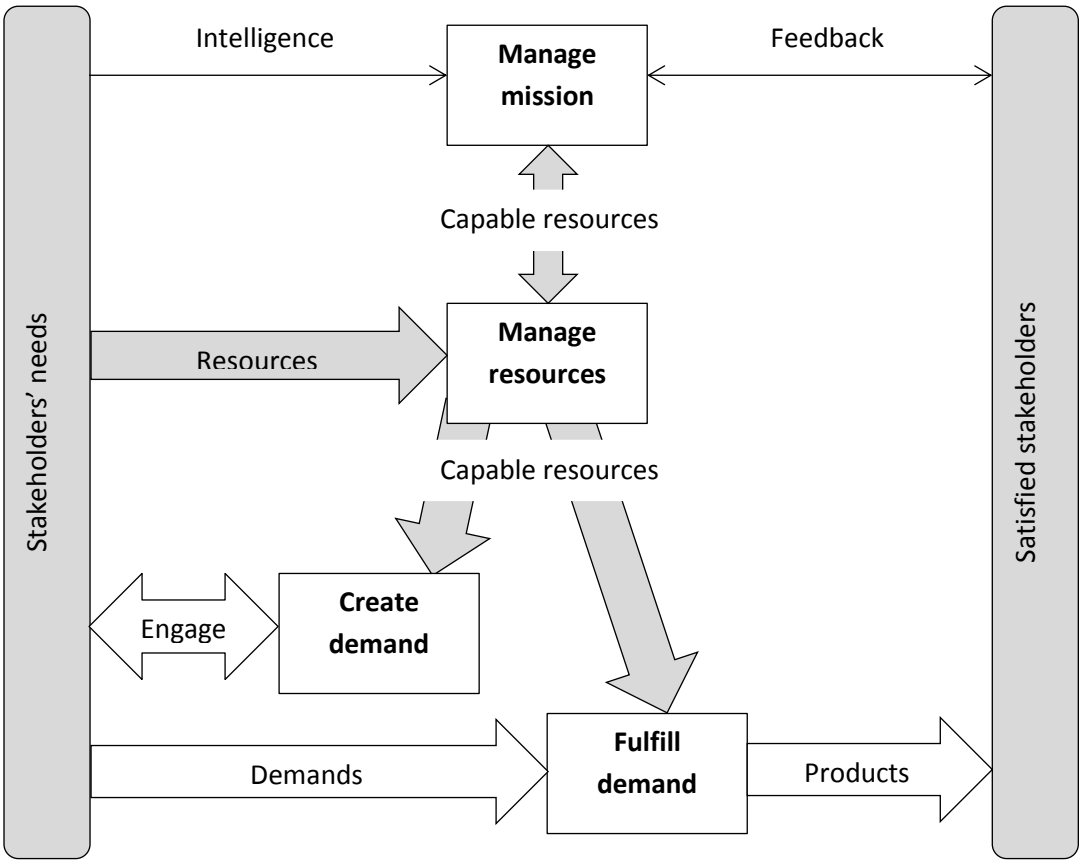


Figure 7 Model of the organization as a system of managed processes (generic system model, Hoyle, 2011, p. 135)

Ultimately, all other processes through which an organization performs work, i.e. the work or task processes, are sub-processes to the four generic business processes. In designing a quality management system, both business processes and work processes must be determined and managed to achieve the desired quality objectives. According to Hoyle (2011, p. 200), "*a focus on work processes and not business processes is the primary reasons why ISO 9001, TQM and other quality initiatives fail*". This can be

attributed to the fact that such a focus causes the quality system development and execution to lose sight of the organization's business objectives and thus result in a sub-optimization of organizational performance.

As can be seen from table 3, the generic business processes cater to the needs of different stakeholders. According to Hoyle (2011, p. 134), ISO 9001:2008 requirements can be interpreted to primarily take the customer's needs and expectations into account. The resulting system of managed processes, the quality management system, will therefore include those processes whose outputs deal with the customers' needs and expectations relative to quality objectives (see the customer satisfaction cycle to the left in figure 8). The approach in ISO 9004:2009, on the other hand, takes all stakeholders into account (Hoyle, 2011, p. 134). The resulting system of managed processes, the business management system, now includes all processes whose outputs are a concern to some stakeholder relative to the organization's vision and mission (see sustained success cycle to the right in figure 8).

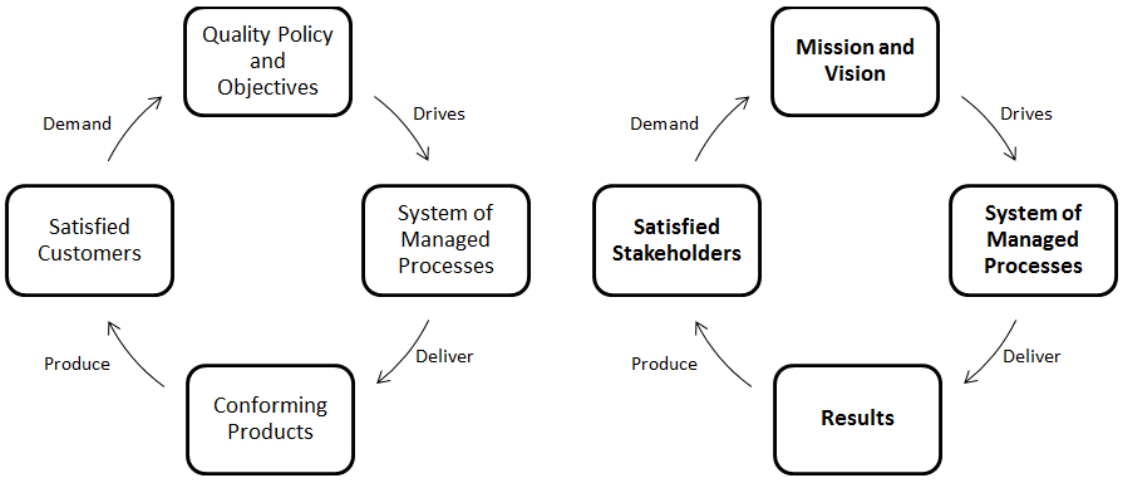


Figure 8 Customer satisfaction cycle vs. Sustained success cycle (Hoyle, 2011, p. 134)

Hoyle (2011, p. 101) argues that the holistic approach of ISO 9004:2009 should be the basis for establishing a management system, because such a system would enable the

organization to deliver outcomes that satisfied all stakeholders and thus avoid sub-optimization of performance. He writes:

> "*For the application of ISO 9001 to be successful, quality has to be a strategic issue with every function of the organization embraced by the management system that is focused on satisfying the needs of all stakeholders"* (Hoyle, 2011, p. 84)

This resonates well with the argument that a non-holistic approach to system design may cause poor implementation because the system is seen as separate from the business. It also resonates well with the argument that ISO 9001:2008 must be regarded an assessment standard, not a design tool (Hoyle, 2011, p. 94). Therefore, although it can be argued that not all of the business processes in Figure 7 necessarily have a direct effect on quality and customer satisfaction, a quality management system, or more correctly, a business management system, should model all of them, as well as their interrelationships. Furthermore, it can be argued that all of the generic business processes do in fact affect quality and customer satisfaction, which strengthens the argumentation for developing the quality management system as a complete business management system.

Based on the above discussion and on observations made prior to the startup of this case study, the following proposition can be stated:

Proposition 7: Sweco's quality management system is designed to produce outputs that aid in achieving several of the company's business objectives by satisfying the needs of several stakeholders

Proposition 8: Sweco's quality management system (sweco@work) treats aspects from several of the four generic business processes: Mission management, Resource management, Demand creation and Demand fulfillment. Therefore, it can be argued that the system is somewhat developed through a holistic approach, such as that of ISO 9004:2009.

Proposition 9: However, above all, Sweco's quality management system places an emphasis on the demand fulfillment process and corresponding outputs and objectives, indicating that the system falls short of being a complete business management system.

4.2.4 Management commitment

Another concept related to motivation for system development and implementation is management's commitment to the system and its use.

One of the eight quality management principles of ISO 9000:2006 is the principle of leadership. Furthermore, leadership and management commitment on several levels of the organization are identified as a critical success factors for the implementation and maintenance of a successful quality management system by several authors (e. g. Kaziliunas, 2010; Kim, Kumar, & Kumar, 2011; Poksinska, Dahlgaard, & Antoni, 2002; Ab Wahid & Corner, 2009). Frequently, research on the impact of management commitment on quality management success displays an emphasis on the top management level (Soltani & Wilkinson, 2010). For example, in their study on ISO 9000 certifications in Swedish organizations, Poksinska et al. (2002, p. 304) concludes:

> *"Like many previous studies, this study underlines the need for management commitment and participation. […] Without top management commitment, the program would not gain substantial credibility in the eyes of the employees and the resistance to change would be difficult to overcome"*

However, the importance of commitment in middle and lower management is not overlooked in literature. For example, Beer (2003, p. 629) identifies "*Inadequate down-the line leadership or management skills and development"* as one of six barriers to TQM implementation (the other five being *Unclear strategy and conflicting priorities, Leadership style of general manager – too top-down or too laissez faire, An ineffective top team, Poor coordination, and Closed vertical communication (top-down and bottom-up)).* According to Beer (2003, p. 627) managers in all subunits of an organization need the capability to:

> "*(1) Develop commitment to TQM though an effective dialogue about why the company should adopt TQM and agreement about what must be done to implement it; (2) follow up their initial commitment with changes in organizational arrangements needed […] and behavior needed to support*

their TQM intentions; and (3) create an honest organization-wide conversation about the effectiveness of TQM implementation from which they can learn about the quality of their management and leadership in moving change along"

Moreover, Beer (2003, p. 630) goes on to point out the influence that top management can have on line managers:

"The inadequate number of down-the-line leaders typically perceived by employees as a core barrier to implementing strategies like TQM is also a function of an ineffective senior team."

Similarly, Soltani & Wilkinson (2010, p. 369) argue that:

"Senior management's orientation towards the underlying assumptions of TQM are not only a major factor influencing TQM effectiveness but more importantly moderate and influence the middle management's orientations toward both first line managers and TQM"

From the above it is evident that both senior management's and middle management's commitment is a necessary prerequisite for developing and implementing a quality management system effectively. Furthermore, as with the case of most change initiatives, simply expressing such commitment in policies or corporate speeches is not sufficient. To quote Kotter (2012, p. 99): *"Nothing undermines the communication of a change vision more than behavior on the part of key players that seems inconsistent with the vision".* This "walk the talk" approach is also emphasised in quality management literature (e.g. Green, 2012).

Management's commitment and how it is communicated may be influenced by the motivation for quality system development and implementation. Presumably, an internally driven motivation will be accompanied by a more profound management commitment, perhaps because internal motives will have a more direct link to the organization's business objectives. An externally driven motivation, on the other hand, may cause what Jacobsen (2012, p. 78) calls a symbolic change or concious hypocrisy:

> *"Symbolic change […] can be a concious strategy […]. You say something, demonstrate it to your surroundings by creating special strucures or systems and then, in reality, you secretly do something completely different. […] A common example is the requirement that all types of organizations, regardless of what they do, shall have a system for quality management"*

Naturally, such an approach would cause management to demonstrate less commitment than if the system had been developed with the intention of producing real change in the organization.

Knowing the influence that management commitment has on quality system development and implementation, it is useful to examine the commitment of Sweco's management, both on a national and regional level. Furthermore, it is useful to investigate how this commitment is communicated and demonstrated throughout the organization, as well as whether there are signs of symbolic change in the organization. On this basis, and considering observations made in the organization, the following propositions are posed:

Proposition 10: Both top management and middle and lower management is Sweco display signs of commitment to implementing and maintaining the quality management system

Proposition 11: Simultaneously, there are some signs of symbolic change in the organization

Proposition 12: There are differences between the level of ambition on the national and regional levels, and the regional levels display more signs of symbolic change

4.2.5 Alignment with strategy, structure and culture

In Figure 7, the organization was modeled as a system of managed processes. Another way to model an organization is shown in figure 9. Here, the term Business System denotes the way a firm conducts its business or "*the specific configuration of resources, value-adding activities and product/service offerings directed at creating value for customers"* (De Wit & Meyer, 2010, p. 168).

The three "pillars" supporting the Business System, the Organizational Structure, Organizational Processes and Organizational Culture, make up the Organizational System of the firm. By equating the firm's Business System with its strategic configuration (although strategy will both affect and be formed by the Organizational System as well), the figure indicates that the strategic configuration needs support from both structure, processes and culture, as well as from organizational members. Thus, the different components of the organization must be in alignment in order for it to reach its business objectives and optimize performance.

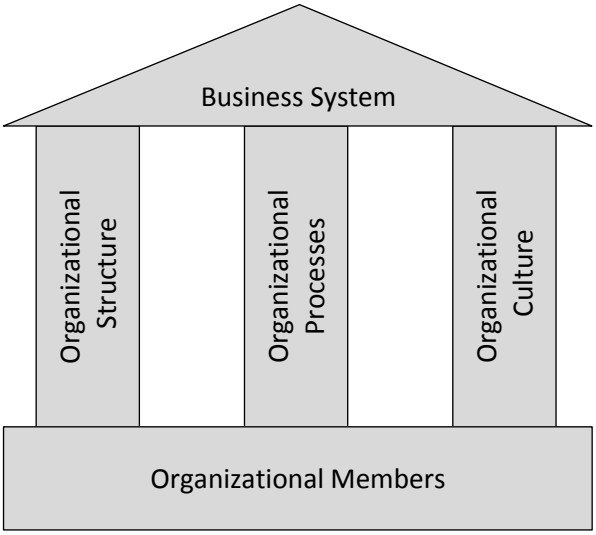


Figure 9 The business system and the organizational system (De Wit & Meyer, 2010, p. 168)

This notion of alignment between strategy, components and sub-systems of an organization is evident in literature covering a broad spectrum of organizational concepts. For example, Cousins, Lamming, Lawson, & Squire (2008), use the strategic supply wheel to show how an organization's supply strategy must be aligned with other components of the organizational and business systems (see figure 10). Similarly, the 'best fit' approach to human resource management (HRM) suggests that the HRM strategy should be closely aligned with

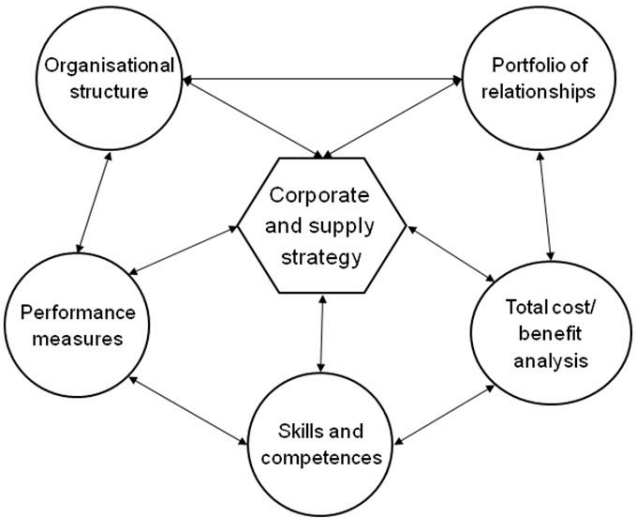


Figure 10 The strategic supply wheel (Cousins et al., 2008, p. 93)

business strategy because "*business performance will improve when HR practices mutually reinforce the firm's approach to the marketplace*" (Wilton, 2011).

Based on the discussion above, it can be argued that the quality management system needs to be aligned with both the business system and the organizational system of the organization. Therefore, Sweco's QMS's alignment with structure, strategy and culture, respectively, should be examined. On this basis, combined with observations made in the organization prior to this case study, the following propositions are stated:

Proposition 13: Sweco's quality management system is aligned with the organizational structure.

Proposition 14: Sweco's quality management system is aligned with the organization's strategic dimensions such as vision, mission and strategic objectives

Proposition 15: Sweco's quality management system is aligned with aspects of organizational culture such as values.

4.2.6 Implementation strategy

In quality management system development and realization, the implementation strategy and tactics applied will have a key influence on the degree of implementation success. To quote Beer (2003, p. 624), "*failures of TQM to persist are failures in implementation, not TQM theory and method".* In the case company of the present study, system implementation has been done both continuously and iteratively over a number of years. Furthermore, the system has at several times been refined with input from systems of acquired companies, as well as redesigned and disseminated throughout a company that has seen an enormous growth both organically and through acquisitions. Therefore, the tale of how the system has been implemented over time in Sweco could make up an entire case study in itself. Thus, in this study, an attempt to examine system implementation in full will not be made. Nonetheless, there are aspects of system implementation that deserve and require attention in this study. Since the system has already undergone its initial implementation years ago, the term implementation will here be taken to mean the efforts that are made to ensure that the system is used as intended and thus producing the outcomes it is designed to

produce. This definition of implementing a QMS corresponds with the one given by Hoyle (2011, p. 219).

Several authors have made attempts to reveal the critical success factors for quality management system implementation. For example, Kim et al. (2011) identify eleven CSFs for ISO 9000 implementation; appropriate motivation for implementation, leadership, training, involvement of all staff, organizational resources, a quality-oriented culture, a customer- based approach, a process-centered approach, good communication and teamwork, customizing the ISO requirements and a quality audit. Similarly, Poksinska et al. (2002) identified documentation, top management commitment and middle management commitent as the three most significant CSFs for ISO 9000 implementation. Furthermore, Kaziliunas (2010) lists the following CFSs for ISO 9000 implementation: motivation for implementation; top management commitment; alignment with strategic dimensions such as mode of control (control or creativity orientation) and strategic objectives; continous improvement orientation; and audits focused on performance rather than compliance. Moreover, Ab Wahid & Corner (2009) identified CSFs for ISO 9000 maintenance in the post-certificication period. These were: top management commitment, employee involvement, teamwork, reward system and communication (human aspects), measurement of performance, understanding of ISO and continous improvement of process, people and system.

Tackling the issue from another angle, several authors have also made an attempt to identify barriers to successful system implementation. For example, Green (2012) mentions lack of senior management commitment, vague improvement goals, lack of developing and sustaining a quality oriented culture and lack of employees' motivation, participation and team working as possible reasons for TQM implementation failure. Silarly, Beer (2003, p. 629) identify the six "silent killers" of TQM implementation depicted in figure 9. Some of the CSFs and barriers mentioned, such as management commitment and alignment with strategic dimensions, have been discussed previously in this paper. In the following section, therefore, some additional selected CSF's will be discussed.

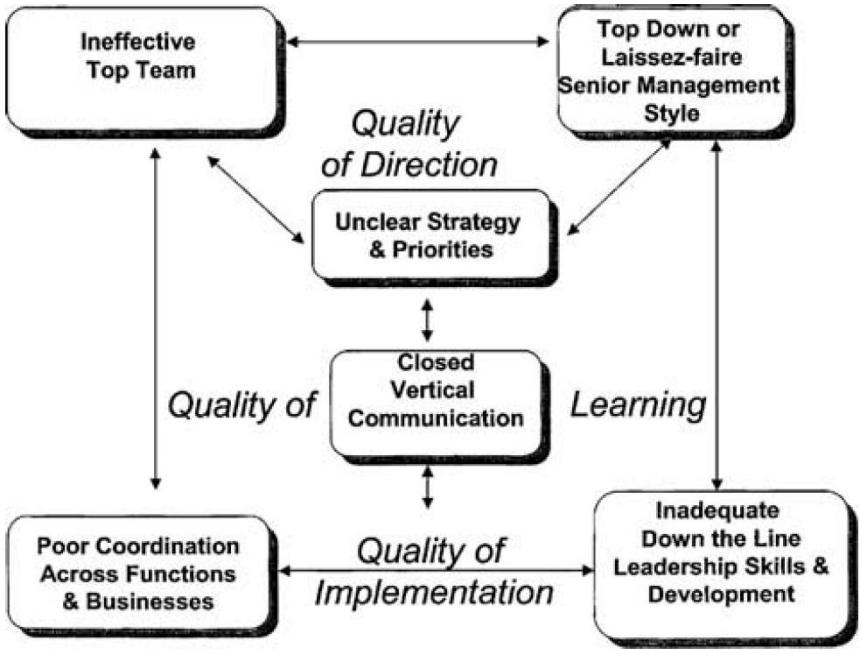


Figure 9 The six silent killers of successful TQM implementation (Beer, 2003, p. 629)

Individual performance as a factor of implementation

From the examples of research on critical success factors and barrers to QMS implementation above, it is evident that human factors are of immense importance. Illustrative of this notion, Kim et al. (2011, p. 386) list barriers based on organizational, technical, economic and human resource issues, holding that "*among these, the most important barrier is related to human resource such as a lack of leadership, insufficient involvement of employees, and absence of training".* This focus on the behavioural

aspects of system implementation is also emphasized by other authors. For example, Hoyle (2011) argues that in addition to a systems approach and a process approach, the establishment of a sound quality management system also needs to incorporate a behavioral approach. At the same time, the behavioral approach may be the approach most diffucult to master. Unfortunately, there is no easy solution to solve the conundrum of achieving employee involvement and commitment. To quote Wilkinson (2004, p. 1021):

> *"The 'human factor' is central to success: however a good strategy TQM is, it needs to be implemented, and this depends on people. […] However, the prescriptive literature on TQM says more about what employers are trying to achieve in terms of employee commitment than about how this is to be achieved or the problems that mey be faced in attemtping to do this."*

A common model of individual performance in human beings treats performance as a function of ability, motivation and opportunity (Wilton, 2011, p. 48) or alternatively, as a function of ability, motivation and environment (Hoyle, 2011, p. 186).

Ability

According to Wilton (2011, p. 48), ability factors are the "*range of individual attributes or competencies that affect a person's capability to carry out a specified job role, such as their knowledge, skills, attitude, behavior, or, most likely, a combination of these factors".* Important ability factors that can be managed to optimize employee performance include recruitment of individuals that embody the appropriate values and competences, and establishment of positive psychological contracts with employees (Wilton, 2011, p. 49). In terms of QMS implementation, however, the most important lever for increasing ability is perhaps training and development of employees. Indeed, as can be seen from the overview above, training is identified as a CSF for QMS implementation. Training can provide employees with the capabilities necessary to use the system as well as an understanding of how the system is designed, and thus how their behavior affects system performance.

Based on this importance of training and development of employees, and based on observations made in Sweco during the period of time leading up to this case study, the following propositions are stated:

Proposition 16: In Sweco, there is an emphasis on providing training in QMS use and understanding for employees.

Proposition 17: However, reasons for non-compliance associated with ability are frequently stated, such as:

- *Lack of appropriate training*
- *The system is difficult to use*

Motivation

Besides the tasks that employees are required to perform, which are usually regulated by an explicit contract of employment, employee manuals etc., they may or may not choose, deliberately or not, to display discretionary behavior. This is behavior "*that is of positive benefit to the employing organization but which cannot be required by contract, only encouraged through a positive psychological contract"* (Wilton, 2011, p. 455), and it is therefore desirable from an employer's point of view. The psychological contract can be defined as the unwritten, reciprocal expectations that form between an employee and the organization, and it is assumed to have a vital influence on the job motivation of the employee (Wilton, 2011).

Motivation *"can be understood both as the individual's choice to perform a particular task, as well as the level and persistence of effort given to that task"* (Wilton, 2011, p. 49). There are several well-known theories on motivation, of which the most common is perhaps Maslow's hierarchy of needs (see Figure 10), which represents a category of motivation theories denoted *content theories*. Another example of a content theory is Herzberg's distinction between hygiene needs, which are factors that will have a detrimental effect on job satisfaction and motivation when not present, such as salary or working conditions, and motivation needs, which have a positive effect on job satisfaction and motivation, such as achievement, recognition, responsibility and work itself (Hoyle, 2011, p. 186).

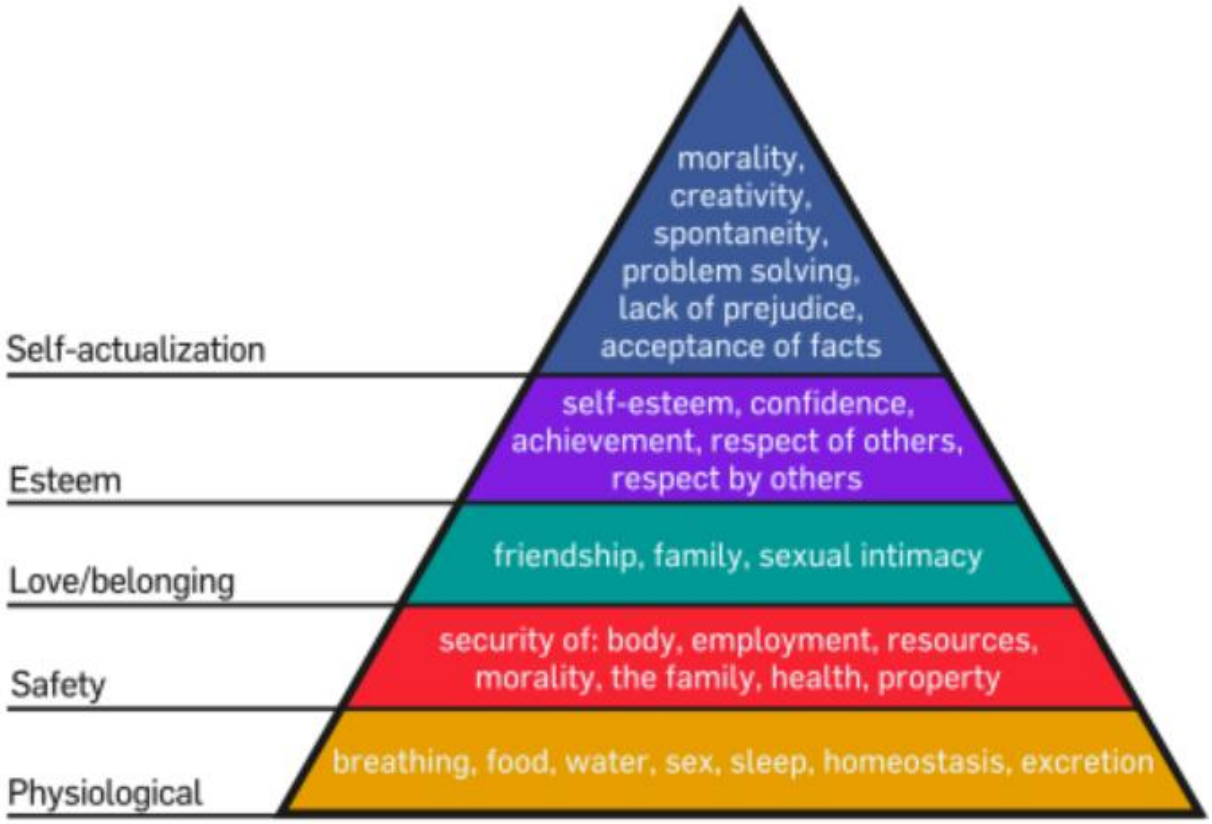


Figure 10 Maslow's hierarchy of needs (Wikipedia, 2013)

The other category of motivation theories is *process theories,* of which an example is expectancy theory. In expectancy theory, the 'force' of motivation is expressed as a function of valence (the value a worker places on a particular outcome) and expectancy (the employee's subjective assessment of whether or not achieving that outcome is likely); F=V x E (Wilton, 2011, p. 50). Expectancy theory is based on the premise that an organization cannot motivate its employees unless they can offer rewards that they value. With the content theories in mind, it can be argued that these rewards should be achievement of motivation needs rather than hygiene needs, that is, providing recognition and increasing responsibility may be more effective than giving a monetary raise.

Clearly, there is evidence that the display of discretionary behavior is mostly contingent on fulfillment of the higher-level factors in both Maslow's and Herzberg's theories. Employers should therefore strive to provide employees with the opportunity of achieving these factors. However, Hoyle (2011, p. 189) argues that "*managers*

cannot motivate their staff; all they can do is to provide conditions in which staff are motivated".

On this foundation, and on the basis of observations done in Sweco before the start-up of this study, the following propositions are posed:

Proposition 18: There are generally good conditions for employee motivation in Sweco.

Proposition 19: In terms of QMS implementation in Sweco, however, reasons for non-compliance associated with motivation are frequently stated, such as:

- *Lack of understanding of meaning and importance*
- *Lack of incentives for use*
- *There is resistance to change*
- *The system is seen as bureaucratic, complicated and troublesome*
- *The system is seen as unnecessary*

Opportunity

In addition to having the ability and motivation, people need to be immersed in appropriate and enabling surroundings in order for performance to be optimized; they need the 'opportunity to succeed' (Wilton, 2011, p. 50).

According to Wilton (2011, p. 51), employee involvement or empowerment is the most important opportunity factor in achieving high employee commitment to the organization's objectives. To quote Hoyle (2011, p. 186), *"everyone is motivated but not all are motivated to achieve their organization's goals. Many may be more interested in achieving their personal goals".* Ensuring employee involvement will strengthen the positive psychological contract and thereby increase the probability of discretionary behavior and employee engagement, which can be defined as *"a combination of commitment to the organization and its values plus a willingness to help out colleagues"* (CIPD, 2007, cited in Wilton, 2011, p. 38). Similarly, Hoyle (2011, p. 177) argues that "*decisions that stand the test of time are more likely to be made when those affected by them have been involved".* Furthermore, 'Involvement of people' is also one of the eight quality management principles of the ISO 9000 series (IOS, 2006, p. 5).

Wilton (2011) distinguishes between employee involvement and participation. The former *"seeks to harness the talents of employees through the soliciting of their views, opinions and ideas to identify and address organizational problems"* and thereby increases employee commitment and cooperation (Wilton, 2011, p. 290). While giving employees a voice, employee involvement does not give them decision-making authority. Therefore, it can be argued that it "*is underpinned by the unitarist assumption that managers and employees share common interests, and that management should retain fundamental control of decision-making"* (Wilton, 2011, p. 290). Employee participation, on the other hand, implies a grater degree of joint decision-making between management and employees. It can further be argued that employee participation "*is grounded in pluralism in that it implicitly acnowledges the existence of a range of organizational stakeholders whose interests do not always coincide"* (Wilton, 2011, p. 291). Employee participation, therefore, is perhaps more associated with resolving conflicts and negotiation than employee involvement.

Two broad categories of employee involvement and participation in practice are downward communication and upward problem-solving (Wilton, 2011, p. 293). Effective downward communication, including for example newsletters, briefings, presentations and meetings, can help to "*develop a positive psychological contract, enhance the individual's identification with the organization's strategic objectives and develop and sustain organizational culture"* . Upward problem-solving, on the other hand, is a means of providing employee voice by encouraging them to suggest improvements or solutions or to take greater responsibilty for decisions. By quoting Wilton (2011, p. 294);

> *"involving employees in decision-making, particularly where views have a discernible influence, can improve the efficacy of the process and facilitate the effective implementation of decisions. Such involvement can also be a key means by which to reinforce company culture and ethos and, in particular, promote the unitarist notion that employees and managers share common interests and goals"*

Meanwhile, Wiliton also goes on to point out that employee involvement can have the oposite effect by leading to unfulfilled expectations of influence. Therefore, presumeably, it is necessary to strike the right balance between employee involvement and managerial discretion.

The notion of employee inolvement is omnipresent in presecriptive quality management literature and it takes a variety of forms, spanning from merely informing employees of decisions already made and asking for comments, through consulting employees on upcoming decisions to distributing more decision-making power to employees. Employee empowerment, on the other hand, is often used as a more specific concept within TQM, for example in terms of selv-managed teams (Psychology Wiki, 2013) or quality circles (Inc., 2013). While emphasizing and encouraging employee involvement throughout his ISO 9000 handbook, Hoyle argues that empowerment should be applied cautiously because "*to empower employees, managers not only have to delegate authority but to release resources for employees to use as they see fit and to trust their employees to use the resources wisely"* (Hoyle, 2011, p. 188). Either way, it is clear that quality management system development and implementation needs to incorporate some form of employee involvement in order to be successful.

In addition to having a positive effect on employee commitment, employee involvement may also play an important role in ensuring an effective quality management system design. If the QMS or BMS is indeed designed to be an accurate model of how the organization achieves it's business outcomes, such as described in section 4.2.3, this model needs to be continuously updated and refined in order to be correct. Furthermore, the model should be an instrument in improving the business and work processes of the organization, which can only be done by analyzing the system's performance and accuracy. Employees, who perhaps have their daily work practice closest to the realization of these processes, will have vast amounts of information that can be used in this process of updating and redesigning processes and thereby the system. They are therefore an important feedback mechanism to system performance and should thus be consulted and involved in the continous system refinement process.

Beer (2003, p. 624) argues that there is a gap between the TQM rethoric of top management and reality, and that managers fail to investigate into this gap and thereby may contribute to implementation failure:

> *"Failure to solicit and receive feedback about potential gaps between their TQM rhetoric and the reality of implementation prevents senior management from learning how their own actions and policies may be responsible for the gap and then making changes accordingly"*

To avoid this gap, and thus increase implementation success, Beer insists that managers on all levels of the organization must contribute to an honest organizational-wide conversation by adhering to the five principles in Box 1. Clearly, employee feedback will contribute to the results of such a conversation.

1. *Insist that leadership teams discuss the appropriateness of TQM to their subunit's business model and problems*
2. *Insist that the leadership team engage a task force of its best managers as partners in a data collection and dialogue process about barriers to TQM implementation.*
3. *Insist that the data collection and discussion process allow important, often threatening, issues to get raised and "publicly" discussed*
4. *Insist that the senior team conduct a diagnosis of organizational and management barriers to TQM and develop a comprehensive action plan for change*
5. *Insist that change plans be stress-tested by the senior team by those who must implement them to determine their validity and the organization's willingness and capacity to implement them*

Box 1 Five principles for an honest organization-wide conversation (Beer, 2003)

Involving employees in system feedback as described in the previous sections is one way of adhering to the quality management principle of 'Factual approach to decision making', which is listed in ISO 9000:2006 (IOS, 2006, p. 5).

In terms of QMS implementation, providing employees with the 'opportunity to succeed' must also mean allocating the necessary amount of resources to do so, as well as communicating an expectation that they use those resources as intended. Based on the discussion above and on observations made in the organization prior to this case study, the following propositions can be stated:

Proposition 20: There are signs of employee involvement in Sweco's QMS development and implementation.

Proposition 21: However, reasons for non-compliance associated with other aspects opportunity is frequently stated, such as:

- *Lack of time to learn the system*
- *Ambiguous demands from managers*
- *Perception of pressure to skip the system*

System performance measurement

One aspect of implementation which also adheres to the principle of 'Factual approach to decision making', as well as to several other principles of quality management, is system performance measurement. System performance monitoring and measurement is embedded in the ISO 9001:2008 requirements. For example, provision 8.2.3 states that "*the organization shall apply suitable methods for monitoring and, where applicable, measurement of the quality management system processes"* (IOS, 2008, p. 23). Moreover, when the system is a model of how the organization achieves its objectives, measurement of system performance is necessary to assess whether or not the system is functioning as intended, as well as whether or not it is producing the desired outcomes.

According to Hoyle (2011, p. 161) there are two types of measures; stakeholder measures, which respond to the question "*what measures will the stakeholders use to reveal whether their needs and expectations have been met?",* and process measures, which respond to the question *"what measures will reveal whether the process objectives have been met?".* Since the system, and hence the processes, ultimately need to produce outputs that are evidence of fulfilled stakeholder needs, the process measures should be derived from the stakeholder measures. According to Hoyle (2011, p. 102), a flawed approach to system performance measurement is simply to measure whether or not there is conformity with procedures, or worse yet, with ISO 9001 requirements, because such an approach will not give an indication as to whether or not desired system results are produced. Instead, he argues that there are three dimensions of process performance that needs to be assessed and that these can be

expressed by the following three questions (Hoyle 2011, p. 170); (1) how are we doing against the plan?; (2) are we doing it in the best way; and (3) how do we know it's the right thing to do? This way, it will be revealed whether the processes are performed as planned, whether they could have been planned in a better way and finally, whether they are producing the appropriate results relative to stakeholders' needs.

Besides being a necessary feedback mechanism in system maintenance and development, measurement also plays a role in affecting people's behavior. The common saying "what gets measured gets done" applies here, and measures should therefore be selected cautiously. Hoyle (2011, p. 185) argues that there is an interaction between the standards of performance, the measures and the resulting behaviors. Both standards and measures, therefore, *"must be derived from stakeholder success measures or key performance indicators otherwise they will influence people in the wrong direction"* (Hoyle, 2011, p. 186).

Based on the above discussion, and on observations done in the organization prior to the startup of this case study, the following proposition is stated:

Proposition 22: In Sweco, quality management system measurement places more emphasis on measurement of compliance than with measurement of system and process results.

4.3 "The gap" and principles for the minimization of such

Once the QA system vision and status are determined, it is possible to explore whether there is a discrepancy between how the organization intends to utilize its quality management system, and how it is actually used. Moreover, it is possible to examine the reasons that may contribute to this discrepancy. As mentioned, several of the aspects of QA system vision discussed earlier may give rise to conditions that hinder successful system implementation. The theoretical background of these aspects will not be outlined again in this section. However, observations made prior to the present study indicated some possible additional reasons, which, together with the reasons associated with QA system vision, give the following propositions:

4.3.1 Is there a gap?

The basic assumption of this study, based on observation prior to study startup, is the following proposition;

Proposition 23: there is a discrepancy between how the organization intends to use its quality management system and how it is actually used in assignments in the region of Hedmark-Oppland.

4.3.2 Principles for minimization of gap

Given that the assumption above holds true – that there is a gap between how Sweco's quality management system is intended to be used and how it is actually used in the region of Hedmark-Oppland, the goal of this study is to develop some principles that may be used to minimize that gap. As will be outlined in this section, those principles will be based on principles of change management and change leadership.

It is quite difficult to pinpoint exactly what constitutes organizational change, because in a way, organizations are continuously changing. According to Jacobsen (2012, p. 25), an organization experiences a change when it moves from one relatively stable position to another relatively stable position. Furthermore, he defines organizational change as a process. This definition of change is illustrated in figure 11. Recalling the illustration of this study's problem statement in figure 2, we can immediately see that there is a resemblance. Given that the gap in the problem statement exists, and that we wish to do something about it, bringing the QA-status closer to the QA-vision will require some sort of organizational change.

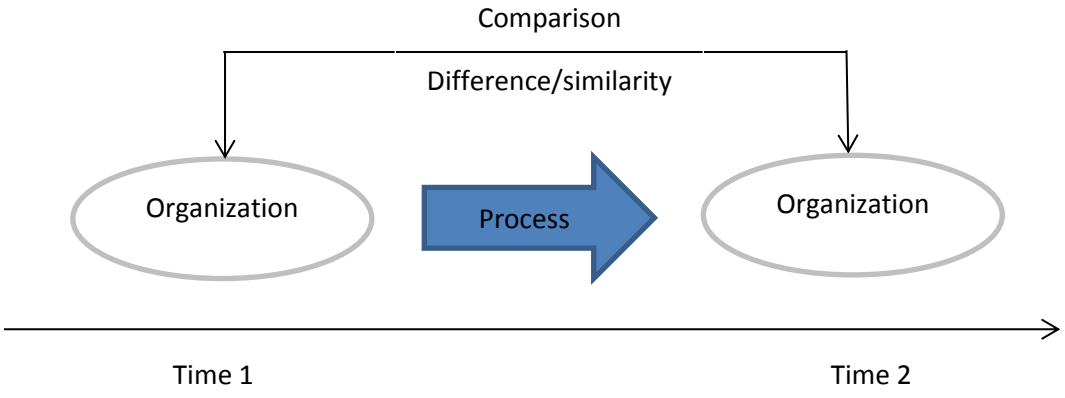


Figure 11 Change as a result of a process (Jacobsen, 2012, p. 25)

According to Jacobsen (2012), there are five perspectives of change, each associated with a specific driver for change. These are planned change, with purpose being the driver; change as life cycles, where growth is the driver; change as evolution, where competition for limited resources is the driver; change as a dialectic process, where conflict of interest is the driver; and change as anarchy, where coincidence is the driver. In this case, the driver for change will be an intention or purpose, and the change will thus be planned. For planned change, Jacobsen (2012, p. 38) describes four phases: the diagnostic phase, the solution (which is the description of the desired state and the plan to get there), the execution and the evaluation.

Another approach to planned change is provided by John P. Kotter, a well-known author within the field of change leadership. In this book *Leading change* (2012), he proposes an eight-step model for the preparation for, implementation and maintenance of change. In the following paragraphs, the rationale behind each step will be briefly introduced.

Establishing a sense of urgency

Kotter argues that because change requires sacrifice, extra workloads, discomfort and cooperation from a great number of people, executing the change effort will be extremely difficult, or even impossible, when there is a high level of complacency in the organization. Therefore, he argues that the urgency level in the organization must be pushed up in order for people to realize that there needs to be a change.

Creating the guiding coalition

According to Kotter, there must be a coalition guiding the change effort. Furthermore, he argues that such a coalition will need to consist of members that display four key characteristics: position power, expertise, credibility and leadership, and that the coalition will need to work together as a team towards a common goal.

Developing a vision and a strategy

Kotter argues that (2012, p. 71)

> *"In a change process, a good vision serves three important purposes. First, by clarifying the general direction for change […], it simplifies hundreds or thousands of more detailed decisions. Second, it motivates people to take action in the right direction, even if the initial steps are personally painful. Third, it helps coordinate the actions of different people, even thousands and thousands of individuals, in a remarkably fast and efficient way"*

This is also supported by Hoyle (2011, p. 178), who states that

> *"A shared vision is not a vision statement we all agree with, it is a force that binds people together with a common aspiration. […] When people share a vision, the work they do together becomes focused on a common purpose and is not adversarial or competitive".*

Communicating the change vision

Kotter goes on to argue that (2012, p. 87)

> *"The real power of a vision is unleashed only when most of those involved in an enterprise or activity have a common understanding of its goals and direction."*

Therefore, he argues, the vision cannot be communicated enough. He states the following key principles for communication of the change vision (Kotter, 2012, p. 92): simplicity, use of metaphors, use of multiple forums, repetition, leadership by example, explanation of seeming inconsistencies and two-way communication.

These steps, creating urgency, creating the guiding coalition, developing the vision and communicating the vision, are steps that need to be undertaken before the execution of the change effort, and according to Kotter, they cannot be stressed enough.

Empowering employees for broad-based action

According to Kotter, a successful change effort will depend on the effort and discretionary behavior of a large number of individuals in the organization. He goes on to present five principles of empowerment of people (Kotter, 2012, p. 119): communicate a sensible vision to employees; make structures compatible with the

vision; provide the training employees need; align information and personnel systems to the vision; confront supervisors who undercut needed change.

Generating short-term wins

Kotter argues that short-term wins serve six purposes in a change effort (Kotter, 2012, p. 127); they provide evidence that sacrifices are worth it; they reward change agents with a pat on the back; they help fine-tune vision and strategies; they undermine cynics and self-serving resisters; they keep bosses on board; and they build momentum. Furthermore, Kotter emphasizes that planning for short-term wins is something quite different than simply hoping for them.

Consolidating gains and producing more change

According to Kotter, many change efforts fail when victory is declared to soon because that will cause the urgency rate to plummet and resistance to rise again, which will lead to regression. He presents five principles of successfully keeping momentum and consolidating change (2012, p. 150): produce more change, not less; bring in more help; leadership from top management; project management and leadership from below; reduction of unnecessary interdependencies.

Anchoring new approaches in the culture

Kotter argues that unless the change is anchored in the organizational culture, either by killing of inconsistent pieces of the original culture or by replacing it altogether, the change that has been produced will not be sustained. He presents five principles of anchoring change in a culture (2012, p. 166): culture comes last, not first; it depends on results; it requires a lot of talk; it may involve turnover; and in makes decisions on succession crucial.

Based on this, the following proposition is stated:

Proposition 24: The region of Hedmark-Oppland can use elements from Kotter's eight-step process of creating change to improve the implementation of the QMS.

5 Results – QA system status

Recall the following propositions:

Proposition 1: The Quality Control Plan is relatively seldom used *Proposition 2: Employees use the intranet (Sweco@work) quite randomly*

The use of the Quality Control Plan (QCP, see appendix 2) was measured by sampling a selection of assignments and assessing whether or not the assignment folders contained such a plan. The assignments were chosen from lists of active assignments and selected to represent a variety of professional disciplines as well as sizes (see appendix 1). Several interview respondents reported having established the plan in several projects but that it tended to be 'forgotten' over time, so that they would only check off items at the beginning of the project. To verify whether this was a general issue, the phases where something had been checked off or there had been established a hyperlink were registered. In other words, if one of the 3-5 items per phase had been treated in any way, that phase would be registered as completed. The assignments were selected from four different profit units located in the Hamar-office. The results are given in the table below.

Total number of assignments checked	**45**
Number of assignments <100.000	*8 (18 %)*
Number of assignments 100.000-249.000	*10 (22 %)*
Number of assignments 250.000-499.000	*8 (18 %)*
Number of assignments 500.000-1.000.000	*10 (22 %)*
Number of assignments >1.000.000	*9 (20 %)*
Total number of established QCP's	**13 (29 %)**
Out of established QCP's:	
Initiation (I) filled in	10 (77 %)
(I) and Planning (P) filled in	10 (77 %)
(I), (P) and Execution (E) filled in	6 (46 %)
(I), (P), (E) and Control (C) filled in	4 (31 %)

(I), (P), (E), (C) and Close (C) filled in	0 (0 %)
Number of established QCP's, by assignment size	
<100.000	0 (0 %)
100.000-249.000	4 (40 %)
250.000-499.000	3 (38 %)
500.000-1.000.000	1 (10 %)
>1.000.000	5 (56 %)

The total number of established QCP's is quite moderate (29 % of the total number of assignments), which suggests that Proposition 19 holds true. Moreover, this corresponds quite well with the scenario that respondents present during interviews. Most respondents from Hedmark-Oppland report having used the QCP, but not extensively. There is of course the possibility that the plan has been established on a desktop or local area. This would defeat some of the purpose of the plan, since neither project personnel nor others would be able to access it there. A more central question, however, is whether or not the relatively low number of QCP's means that a similarly low number of assignment managers use the system at all, or whether they adhere to the documentation requirements of the system without filling in the plan. It is not easy to find an accurate answer to that question, but there are signs that many use the system to some degree.

For example, a few respondents report performing some, or even most, of the documentation requirements without using the QCP. Specifically, establishing a contract, a delivery- and control plan and documentation of technical controls are mentioned. Of the 45 assignments checked for the QCP, 38 assignments had either a contract or an order confirmation. Among the remaining seven, four projects had other documents that indicated that such a document existed, although not in the assignment folder. This could imply that many are indeed performing the documentation requirements without using the plan, in which case the question is whether or not using the plan is really necessary as long as the requirements are met.

On the other hand, not one of the projects that did not have a QCP had an environmental check-in document, which is another requested item. Similarly, not a single interview respondent report using the assignment planning tool whatsoever. Furthermore, during an internal control of documentation of calculation control (self-inspection and peer review) that took place in the spring 2013, several projects lacked the required documentation of such. Therefore, it cannot be concluded that the documentation requirements are maintained in most projects despite not being checked off in the QCP. In the words of an office manager in Hedmark-Oppland:

> *"I think that we in many projects, perhaps too many, perform peer review and perhaps a few check lists and that's it. Legally that's pretty much ok, but audit-wise I guess it's not."*

Consider also the following excerpt from an interview with a group manager:

> *Researcher: "one thing is knowledge about how to use [the system], but how about the motivation to use it?"*
>
> *Group Manager: "That's high, because you know that if you send out a drawing with an error, you'll get a phone call or there will be lots of commotion."*
>
> *R: "What about the things that apply more to contracts and the things that do not apply directly to technical control, but the other items on the QCP?"*
>
> *GM: "Well, it is perhaps less for that part. It might happen that we do one of those environmental check-ins, but perhaps you take it quite lightly sometimes. "Yes, what was that again?" We try, but of course… the motivation for that is perhaps not as high as for the technical quality."*

In section X, it was demonstrated that group and assignment managers get quickly into technical inspection during interviews and that they largely see the QMS as a tool in achieving technical quality. It is possible therefore, that the technical control is usually performed regardless of whether it is registered in the QCP. Furthermore, establishment of a contract has been a previously been focal point of the QA-function and the organization at large, which may explain why this seems to be pretty well

incorporated. However, this cannot be interpreted as the system being used as intended regardless of the number of QCP's established. In the words of Sweco Norway's QA-leader:

> *"If you say that we have 1000 assignment managers, which we have, unfortunately, we have far too many, I do not think that the majority knows [the documentation requirements]. That would be over 500 people, so that I do not think."*

Up until this point, the discussion has shown that employees do not fulfill the documentation requirements systematically. Rather, there are some requirements that are fulfilled in most cases, some that are fulfilled quite randomly, and some that are neglected altogether. In addition, there are signs indicating that tools and other sweco@work contents are also used at varying degrees. For example, a local QA-coordinator states that:

> *"I don't think [the tools and manuals] are used very often. That is sort of the thing with our QMS, there are many opportunities for controlling various things in assignments, but it is a little troublesome to go through everything. If you find something, it does not necessarily apply directly to your project and then I think people just avoid using it."*

Other respondents report using tools and manuals more frequently after attending the assignment manager course, and others yet report feeling hope that the restructuring of trade-specific contents will make the system easier to maneuver (see section 6.6.3). There are no respondents reporting that they use sweco@work extensively on a daily basis. All in all, there are signs of the QMS being used. However, there is no evidence suggesting that it is used as an integrated part of the assignment managers' everyday tasks. Hence, Proposition 22 can be accepted.

6 Results – QA-system vision and possible reasons for lack of system use

6.1 Motivation for system implementation

Recall the proposition:

Proposition 3: The motivation for certification and system implementation in Sweco is a mix of internal and external motives.

On Sweco Group's home page, 'Knowledge' is listed as one of the company's four strategic areas of focus (the other three being 'Employees', Corporate culture and brand' and 'Growth'). Under the 'Knowledge' tab, it is stated that *"Sweco's knowledge strategy is to effectively utilize the company's combined expertise to provide the clients with optimal solutions. […] The management system sweco@work ensures that the assignments are performed in an optimal manner and that new knowledge is preserved".* (Sweco Group AB, 2013b). Furthermore, under the tab 'Responsibility', it is stated that

> *"Sweco's consultants work in projects that have an impact on the development of society and quality of life, which places stringent demands on consideration to ecological, ethical and socioeconomic aspects. Sweco has opportunities to influence development mainly through its involvement in client projects. Sweco group's common quality and environment assurance system, certified by ISO 9001, ISO 14001 and OHSAS 18001, is used by architects and consultants throughout the entire assignment process."* (Sweco Group AB, 2013c)

Similarly, under the tab Quality and Environment in Sweco Norway's web page, one can read the following statement regarding the quality management system; "*The system covers Sweco's common work methods for the execution of assignments, is available to the employees and contains all necessary help functions. […] [It] ensures effective assignment processes and good governance of quality, environment and work environment."* (Sweco Norge AS, 2013b).

The statements above can be interpreted to support both internal and external motivations for system development and certification. Naturally, such statements serve the purpose of conveying to prospective clients and other parties that the company holds the certifications, which can be argued to support the notion of external motivation. Meanwhile, the statements also demonstrate how the system is intended to support the organization in achieving its strategic objectives, such as development of competencies and effective execution of assignments, which indicates an internal motivation.

This mix of internal and external motivation is also supported by several interviewed respondents from all levels of the organizational hierarchy. For example, Sweco Norway's quality leader states that *"[the system] provides a signal to clients that we have a good structure in our way of performing work […]. But it is also about having systems that require us to do things the right way".* Moreover, in outlining the motivation for certification of Grøner's system, parts of which became integrated into Sweco's system upon Sweco's acquisition of Grøner in 2003, Sweco Norway's president explains:

> *"Back in the 90s, we had something called Grøner Sertfifisering […] we [certified companies] and said that we ourselves would have a quality system that was certifiable. […] It was really quite arrogant to say that we didn't need to be certified ourselves […] so to tone down that arrogance, while at the same time seeing that our competitors were not certified, we thought it would be a strength if we, given that we already had the system, took the cost of getting certified. Moreover, it would lead to us always being up to date […]. And often, one receives something… to me, doing a quality audit is a learning process. […] and that is important because that is the intention [of the audits], that we become better, not necessarily that we discover that somebody made a mistake"*

While it can be argued that internal motivation for system development and certification is both more noble and a more expedient success factor for implementation and realization of benefits, it should be remembered that the ISO

9001 standard is in fact intended to be used as a means in assessing *"an organization's ability to meet customer, statutory and regulatory requirements"* (IOS, 2008). Therefore, certification will always to some extent be founded in a need to demonstrate capability for achieving quality, which is an external motivation. Thus, a mix of external and internal motivation must be deemed a good starting point for implementation success and benefit realization.

When asked about their perception of motivation for system implementation and certification, respondents at lower levels in the hierarchy tend to have a less clear opinion. This is only natural, considering that they are less concerned with the rationale behind the system in their daily work. Typically, responses from individuals on lower levels of the hierarchy are more concerned with perceived benefits from the system than with motivations for it. Interestingly, as will be outlined in the next section, the benefits mentioned are largely of a more internal nature, such as avoidance of mistakes, standardization of procedures or increased efficiency in work processes. None of the respondents on lower levels of the hierarchy specifically bring up external benefits such as more tenders won or better reputation. The exception is increased conformity with regulatory requirements. All in all, these responses from lower level line managers and assignment managers indicate that the system is mostly motivated by internal motives. However, there is a possibility that these responses reflect the fact that on a daily basis, these respondents are more concerned with conducting their engineering profession well, rather than with marketing and business development.

While the above discussion shows that there are signs of a balanced mix of internal and external motivation, there are also respondents signalizing that the system in its present form is largely motivated by external pressures. For example, one QA-coordinator states that;

> *"We are quite clear that this is something we do because we must. At least that is my perception, that management only focus on "if we are to be certified, we need to do this". If being certified had not been a requirement from clients, we would… we would probably do quality management but*

not in this way. We would have a simpler process and probably a much less centralized and much more decentralized… each office would do their own thing.[…] The external motivation is not wrong, in my opinion, but for a great many of those working here, it is not what drives them. […] Many put their pride in delivering a good product that continuously gets better, while management gives the impression of being more focused on delivering just good enough to avoid being sued, but no more. […] one should deliver 80 %, because that is good enough, and then rather make a profit than delivering a slightly better product."

However, the same person goes on to say that;

"Now the new president has begun talking about quality in a different way that has not been present in the company while I've been here. He's talking about taking back the professions. What his motivation is, whether it is that he is seeing that we are becoming a company that makes many mistakes and that we have an insurance that is becoming quite expensive, or that we are losing [money] in projects due to mistakes and that this is becoming apparent in financial accounts, or whether it is his personal motivation shining through, I don't know. But it is obvious that there is a greater focus on quality and perhaps a lesser focus on environment."

Taking a slightly different perspective, a middle manager in the region Hedmark-Oppland notes;

"I think [the system] has lost it link to the customer completely. […] The way the system is today, it is more about having internal and external reviews and document that one has done what one is supposed to do [in terms of the certification], as opposed to making it a useful tool towards the customer, which we could have done"

Based on these differing views, it is difficult to conclude on the relative weighting between internal and external motivation in the organization. This is especially true because it is safe to assume that neither top management's statements in an interview

or information from the company's websites would confess to making certification the goal in itself. Furthermore, the motivation behind the present system is largely determined by Sweco Group in Sweden, a unit of analysis that has not been included in this study for practical reasons. However, conclusions drawn in the following sections will shed further light on the issue of motivation. For now, it suffices to conclude that proposition 3 holds true – there is a mix of internal and external motivation for system implementation and certification.

A note on the 'the customers require this'-argument

During observations before the startup of this case study, the researcher several times overheard people promoting system use by referring to the following rhetoric: *"we need the certification to attract customers, and the certification requires us to do this".* This is problematic for two reasons: First, if this statement is in fact true, implying that the system is merely there to satisfy ISO 9001 requirements and thus attract customers by waving the certificate, it provides employees with a quite weak motivation for conforming to system requirements because it conveys an impression that the system is motivated by external motives. As is discussed in section 4.2.1, an approach based on such a rationale is mostly appropriate for producing symbolic change, not performance benefits.

Second, if the motivation for system development is in fact more internally oriented, on the other hand, implying that the system is intended to produce internal benefits for the organization, the statement is not true. In that case, upholding the statement undermines the purpose of the system and how this is communicated in the organization. It was argued elsewhere in this section that engineering employees may be more concerned with achieving excellence within their profession than with marketing. If the system is there to increase professional performance, as well as organizational performance, then that should be the reason that is stated to promote use. Furthermore, if the above rationale is stated frequently although it is not true, employees may become cynical towards the system. Interestingly, there are strong signals that the "the customers require this"-statement is not true. Several assignment managers report that they have not experienced customers demanding that the

organization is certified (or have a certifiable system). This is also acknowledged by the QA-leader, who notes that; *"I too thought for a long time that there was a requirement [for certification] in some requests for tender but when I think about it, I have not seen that yet. That you need a system, yes, but not that it must be certified".* The "the customers require this"-rhetoric should therefore be abandoned in favor of more appropriate rationale for demanding and promoting system use.

6.2 Expected benefits

The expected benefits of system implementation is a concept highly related to the motivation for system development and certification. Recall the following proposition:

Proposition 4: Expected benefits of use of Sweco's quality management system include fewer deviations from regulations/standards/requirements, better financial control of assignments, clearer and more explicit understanding of customer requirements and expectations, increased customer satisfaction, better schedule control, better control of environmental issues, more contracts awarded, better process management and better reputation.

In Sweco's intranet-based management system, sweco@work, the following is stated on the home page of the platform:

> *"We hope that our Management System will serve as a user-friendly tool that will simplify your work when handling assignments. You can use the Management System while working with large and complex assignments, as well as with small and simple ones, and feel that you're being given the support needed for your specific assignment. With this Management System, the aim is to create a common basis for how to work with assignments, how to work with our clients and how we view Quality and Environmental Management. By doing this we also make it easier to cooperate across the company and country borders within the Sweco Group."*

From this, it can be argued that the system is intended to produce benefits such as better and consistent project management in individual projects, increased customer satisfaction, better quality and environmental management and simplified cooperation

within the organization. From figure 1, it can be seen that achieving customer satisfaction is made the ultimate goal of the assignment process. However, as will be argued in section 6.5.2, the system is also designed to fulfill the needs and expectations of other stakeholders as well.

Naturally, interviewed respondents offer a wide variety of perceptions regarding desired and expected benefits of system use. Starting at the top, Sweco Norway's president mentions providing a description of how the organization performs work, measured against regulations (in this case the ISO and OHSAS standards); doing what the organization says it will do; performing according to statutory and regulatory requirements; avoiding or correcting errors (including detecting and eliminating mechanisms that seem to systematically cause errors); ensuring that products and services are properly controlled before delivery; doing things right the first time and thus increase efficiency; ensuring that professional competence is raised and maintained at a similar level across the country; and ensuring that the organization's competence and competencies are developed, anchored and utilized in the company. Clearly, these are all internally oriented benefits, aimed at increasing achievement of organizational objectives mainly associated with technical quality, efficiency and competence.

Sweco Norway's QA-leader lists several of the same desired or expected benefits, such as saving time; doing things right from day one; maintaining the iron triangle of cost, time and quality; and development of the professional disciplines in the organization. In addition, he states:

> *"one of the most important [benefits] of having such a system when we are this many employees, is that we shall always be able to take over an assignment from each other in short notice, and we shall be able to help out. […] Therefore, we must do things the right way… do them in the way we do things in Sweco. […] This is one of the arguments we give in the Assignment Management Courses."*

Similarly, a divisional QA-coordinator states that;

"If you follow the system it is easy for the next person to get started, understand what has been done and continue working. […] If there is more than one person involved in a project, using sweco@work will make it more transparent and easy for others to follow the process. […] Sweco@work facilitates a very including arrangement that is important to engage at least some of those who work here"

The divisional manager of the Building & Construction division notes;

"First and foremost, it is about making sure that our customers are happy with the product we deliver. That means delivering a product without defects or omissions. [Furthermore], for training purposes, both for older and younger employees, I think that if you adhere to some developed checklists for the work operations, you'll learn something along the way."

Among middle management in the region Hedmark-Oppland (region and office managers), stated desired or expected benefits are mainly of a similar nature to those mentioned above. To name a few; increased efficiency through the use of appropriate templates and check lists; better dissemination and implementation of procedures and methods in newly hired employees; doing the job right and making money; and securing a good delivery.

Moving on to the expected benefits mentioned by group and assignment managers, these are quite akin to those already mentioned. Again, to name a few; avoiding errors; rationalizing and standardizing procedures; increased efficiency; providing the delivery that the client expect at the price he expects; and maintaining better control of the whole picture in an assignment.

From the above, it can be seen that desired and expected benefits of the system are more or less congruent with those in proposition 2. Moreover, the benefits are of an internal nature throughout the organization, which can be interpreted in favor of an internal motivation for system development (see section 6.1). It is possible to roughly group the expected benefits into three categories (see figure 12); increased technical quality, better project management practices and development of competence.

Together, these contribute both to increased customer satisfaction, and, as will be shown in section 6.5.2, to the achievement of strategic objectives relative to other stakeholders.

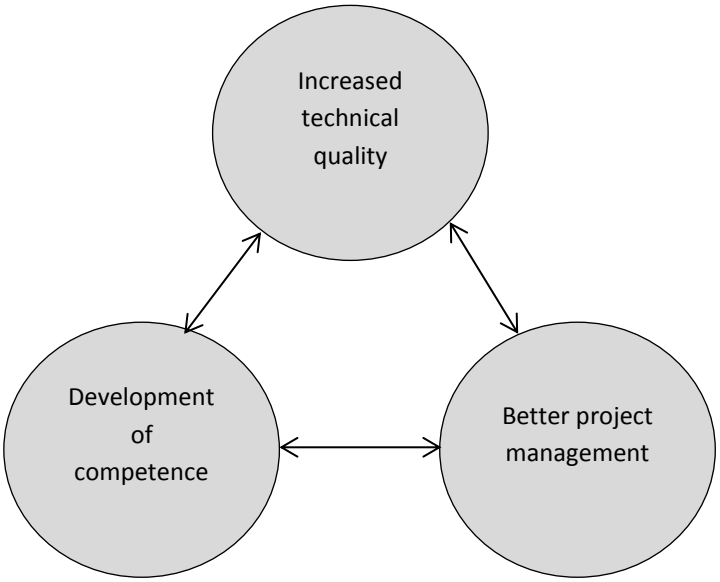


Figure 12 Expected benefits from the quality management system in Sweco

An interesting point is that when discussing quality assurance, some respondents, especially group and assignment managers, have a tendency to get very quickly into talking about technical quality, such as quality control of calculations and drawings. This is perhaps not very surprising, seeing that these are people with a technology background. However, the quality assurance system contains routines and procedures for several other aspects of the assignment process such as contract review, change orders, assignment planning and extraction of experiences, both internally and from clients. In the lower hierarchical levels of the organization, these mechanisms and their associated possible benefits are emphasized to a lesser extent. This can perhaps be interpreted as indicating that employees tend to reduce the scope of the QMS to that of ensuring technical quality more than a means of achieving a broader set of organizational objectives. This could possibly, at least in part, be an explanation for why the system is often seen as complicated and troublesome, because if the system is

seen as a means of merely improving technical quality, then the other mechanisms that it contains may seem as clutter.

A note on the system's ability to improve project management practices

Yet another interesting point is that several respondents, especially group and assignment managers, largely talk about reducing errors by control and inspection rather than increasing quality (and project success) by assignment analysis and planning. The need for quality management in all phases of a project is a well-known phenomenon in the quality management literature. For example, the 'father of the quality evolution', W. Edwards Deming, argued that *"Inspection does not improve quality, nor guarantee quality. Inspection is too late. The quality, good or bad, is already in the product. As Harold F. Dodge said, "You cannot inspect inspect quality into a product.""*. (Deming, 2000, p. 29). Similarly, (Culp, Smith, & Abbot, 1993, p. 340) distinguishes between quality control and quality management; *"Quality control describes inspection or checking of work products. Quality management is designed to prevent defects by doing the job right. Quality management is concerned with preventing problems by creating the attitudes and environment that make prevention possible."*. Schenkel (2004, p. 1158) makes a similar distinction between quality control and quality assurance, equating quality assurance with Culp et al.'s concept of quality management. The fact that some employees tend to emphasise the after-the-fact inspection of deliveries may suggest that the system is seen by some as more of a means of quality control through insepction than quailty management through planning.

This is interesting, because some of the expected benefits highlighted above are clearly directed at improving project management practices in assignments. Furthermore, sufficient and appropriate project planning is often identified in project management literature as a critical success factor for project success (e.g. Pinto & Slevin, 1987; Torp, Austeng, & Mengesha, 2004). Several interview respondents in this study do emphasise the need of proper planning of assignments, while at the same time recognizing that this is an area which needs improvement in the organization. For example, the Building & Construction divison manager notes

"I have two main priorities, [one of which is] assignment management, which is about planning our assignments. It varies, some are really, really good, while some just don't get it. […] when we have downward adjustments in assignments it is… it has not been planned. If you ask an assignment manager "how long until you finish this assignment?" it is hard to come up with an answer, they don't know. But if they had planned the assignment they would have known. So we have some work to do, and it is very important."

Meanwhile, a divisonal QA-coordinator states that:

"I don't think [that the line managers are good at focusing on planning]. I think line managers are focused on making schedules, they are focused on economy and they are focused on finding the right people […] and that's obviously an important job, which they do well. But I don't think line managers are good at talking about planning the[technical] work. A portion of work planning is done when the tender is written but it's very rare that that tender is taken up again […]It will usually be set aside hours, especially in a larger assignment or where there's an experienced assignment manager, towars the end for quality control. But it is always that subsequent control that is emphasized."

In the assignment check list, several items can be argued to be aimed at improving assignment planning (in fact, the planning phase as a whole is highlighted in the IPECC-cursor, see figure 1). For example, mandatory documentation requirements in the check list include assignment planning, internal start-up meeting and changes according to plan. In addition, optional requirements include contract revision upon assignment start-up, risk assessment, resource planning, scheduling, budgeting and establishment of project management handbook. However, despite the fact that some respondents emphasize expected benefits associated with improved project management practices, such as increased efficiency, it can seem as though by others, the system is not first and foremost seen as a means of managing these aspects of the

assignments by others. The following interview excerpt (from an interview with a middle manager in Hedmark-Oppland) is illustrative of this notion:

> Researcher: *"In your opinion, can the quality management system be an aid in executing assignments with improved profitability?"*
>
> Manager: *"We hope that will be the case when we get more effective check lists […]"*
>
> R: "*Technical check lists?"*
>
> M: "*Yes. […]"*
>
> R: "*But what about the items that concern… there are things that deal with contract reviews, understanding of the contract, assignment planning, that sort of things. Do you think that these are useful tools in sweco@work?"*
>
> M: "*For people who are quite new they are, it is always useful to go trough a check list like that because there are things you may forget. But it is especially relevant for those who have not been in the game for that long because for them there will be a lot of things that are new, especially in terms of contracts and… what was the other thing you mentioned?"*
>
> R: *"Assignment planning"*
>
> M: *"Yes… Well, that's something that is recurrent[…] the thing we often miss is… although it says in the [QMS] that we shall do start-up meetings and plan the work and focus on those things, they are not always that well thought through. Så we have a lot to gain in that area, I totally agree. […] But it also happens that the job is mispriced and priced too low so that even though someone so-called looses money in a project, they may still do the job very well. […] Whether or not the job goes well is very dependent on the type of contract we have. But then people need to know what's written in the contract and be able to say "this is actually not included", I guess that's the most important thing. And that is something that many engineers just don't have in them."*

From this excerpt, it is clear that assignment planning and knowledge of the contract are seen as success factors for successful project execution. However, the link is not automatically made between these issues and the quality management system, despite the fact that tenders, contracting and planning are explicitly treated in it. This may suggest that for some, the scope of the system is mostly seen as a means of improving technical quality, not promoting project success as a whole.

Furthermore, there are additional signs of the system not being seen as an appropriate for increasing project management skills in the organization. One example of how the system is not seen as an aid in improving project management practices such as economic governance, good communication with clients and distribution of roles is given by the excerpt from an interview with another middle manager in the region:

> Researcher: *" […] What about in those [projects] where it doesn't go well, do you go back and say that "we should have used the system" or do you go back and say "we should have done something differently"?"*
>
> Manager: *"Very good question. […] But what we often see is that the communication fails in the projects or that one is too little an economist and too much an engineer. […] those are the two overriding reasons. […] There is nothing in the system that ensures the communication with the client. […] For in most cases where projects fail, it is because of a lack of understanding and a lack of communication about actual status in the project. […] One has not sent change orders, has not communicated the state of the project, has not communicated that the delivery we are delivering is different from that initially agreed."*
>
> R: *"But then why isn't that communicated, does one know the state, but choose not to say, or is it because one does not know?"*
>
> M: "*I hope one knows, because otherwise it would be kind of deliberate. But it can be that assignment managers are not confident in that role or do not dare to take on that discussion, which is somewhat uncomfortable […]. But then there is nothing in the system that will help you with that in any*

significant way. […] In most projects, economic overruns are the problem, that you have provided extra service and not gotten paid for it, incorrectly defined roles, performing something other than what was agreed, making other assumptions that those actually done etc., and then you just cover it up and keep working."

Several of the issues mentioned in the two excerpts above (such as communication, distribution of roles, contract management etc.) are issues and practices commonly discussed in project management text books (e.g. Pinto, 2010). It is interesting that the QMS is not really seen as an aid in developing these practices in the organization by several respondents, despite both the fact that it can be argued that the system can provide support for many of these issues, and the fact that some reports that improved project management is an expected benefit. Instead, there are signs of these practices being seen as more inherent in the individual assignment manager. For example, the region manager in Hedmark-Oppland states that: *"It is very person dependent, this business. I'm sure I could point out those who did not use the system and still always lands on two feet, who makes money and delivers a project that the client is happy with*".

Thus, these findings may suggest that good project management practices are seen by some as something that need to exist, or be developed, separate from the system. Furthermore, there are signs that some think that once these practices are developed, they become inherent to that person, making the system reduntant or unessecary. The following statement by a manager in Hedmark-Oppland is illustrative of this notion:

"I don't think a lot of projects get better by establishing the Quality Control Plan in the first round. Of course, you'll see that you need a contract but dear, an assignment managers starting up a project here without a contract, then we'll need to have a talk. There shall exist an tender, but that's kind of… you don't need a quality management system to realize that that makes sense. […] You shall have an idea and something documented in terms of scheduling. You shall document changes. But all of this is kind of

obvious in order for you as an assignment manager to be in control of you project"

Again, the quality management system is not seen as an aid in promoting good project management skills, because these are seen as needing to be inherent in the project manager in the first place. Furthermore, the system is critisized by several respondents for not being designed to help the assignment manager deal effectively with these issues. Regardless of whether or not the system design is appropriate for this or not, and regardless of whether or not it is appropriate to see project management as something separate to the system, this view is problematic for several reasons. First, it can be argued that Sweco's QMS is indeed designed to deal with project management practices such as those outlined above by stating requirements for documentation of aspects of the projects that are essential to project governance. If, then, the system is not seen as appropriate for dealing with this after all, it must either mean that the system does not effectively do what it sets out to do, or that those using it are missing the point. Either way, this may cause the system to be seen as troublesome or complicated because the system requirements may be seen as pointless.

Second, the notion of good project management practices as something that must be nurtured separate from the system (making parts of the system redundant) is problematic because, put in the words of a manager in Sweco's Hedmark-Oppland region, quality management may be seen as; "*a recitation of truisms in a project. That is, it is those things that you think you're taking care of, that you need to make sure you've taken care of, so that you don't simply trust that others have done what they are supposed to do. Because that is the scary thing about quality assurance. Suddenly, one day, that person has not done what he is supposed to do."* In other words, even project management practices that may seem obvious may very well slip if not constantly safeguarded.

Moreover, there are clear signs that Sweco does in fact experience challenges associated with establishing and maintaining good project management practices. Specifically, several managers on different hierarchical levels comment that the assignment manager role may too frequently be given to employees who are not ready

for it. For example, Sweco Norway's QA-leader states that *"[…] We have too many assignment managers… that is, there are too many that do not have sufficient knowledge to understand what they are doing".* Similarly, the Building & Construction divisional managers states that;

> *"There may be too many assignment managers in Sweco who should not [have had such a role], that is something I think we need to professionalize. […] Very often, those who are excellent in a technical discipline, I'm not saying this is always the case but very often it is, are dedicated to that discipline. They are not dedicated to administrative routines. I think that placing those assignments with people who cultivates the assignment manager role… like others are good at wooden structures, you can be good at assignment management."*

Given this fact that the organization do in fact experience challenges associated with the fulfillment of the assignment manager role, good project management practices should be seen as something that needs constant nourishment and development in the organization. It is possible that the QMS is seen by some as either too shallow or too detailed for this. As can be seen from the discussion above, it has been argued on the one hand that project management skills need to form the basis of good assignment execution but that the system is not suitable for promoting these skills. On the other hand, it has also been argued that the system requirements are redundant and do not add value to the assignment because the experienced assignment manager will already be aware of the need to meet these documentation requirements. There is of course the possibility that either one of these arguments hold true, at least to some degree. However, it is also possible that this alternative approach may be more friutful; it may be true that good project management skills cannot be promoted by a check list only and that simply checking off items on such a list will not ensure use of good project management practices. However, within no professional discipline have check lists ever proved to be a sufficient replacement for good sense and knowledge, which is also the case for the Quality Control Plan and sweco@work. Instead, if good project management skills are promoted and strengtened troughout the organization, the items of the check list may be viewed from an informed standpoint and thus gain

meaning. So, for example, merely documenting that a contract exists may not add much value to the project (legal reprecussions set aside). However, if the contract is documented based on the cognition that it will be a steering document throughout the project, that it may be consulted frequently, that it provides the scope of the delivery, that it is the basis against which change orders are measured and so on, then the 'contract' documentation requirement suddenly becomes an important basis for project management. Thus, project management skills and the quality management system can go hand in hand.

6.3 Quality management system design

Recall the following propositions;

Proposition 5: Sweco's quality management system is designed on the basis of the organization's inherent processes and challenges. As such, it exceeds the bare minimum of the ISO 9001 requirements.

Proposition 6: However, the system is frequently seen as something "extra" to the organization's business activities. This indicates that the system in not an accurate model of how the organization functions and that the quality management system does not equal the business management system.

Proposition 7: Sweco's quality management system is designed to produce outputs that aid in achieving several of the company's business objectives by satisfying the needs of several stakeholders

Proposition 8: Sweco's quality management system (sweco@work) treats aspects from several of the four generic business processes: Mission management, Resource management, Demand creation and Demand fulfillment. Therefore, it can be argued that the system is somewhat developed through a holistic approach, such as that of ISO 9004:2009.

Proposition 9: However, above all, Sweco's quality management system places an emphasis on the demand fulfillment process and corresponding outputs and objectives, indicating that the system falls short of being a complete business management system.

As briefly described in section 2.2, Sweco's quality management system, sweco@work, consists of three main processes; the assignment process, the support processes and

the business development processes. Accompanying the main processes and associated sub processes and activities is a threefold set of routines, manuals and tools.

The routines describe the mandatory assignment activities that are meant to fulfill the requirements of the ISO 9001 and ISO 14001 (and recently the OHSAS 18001) certifications. In sweco@work, it is stated that *"the QA-system is the certified part of the management system. Here, requirements are set for the assignment process, a number of support processes and the business development. The requirements are formulated in routines that fulfill the demands of certification according to ISO 9001 and ISO 14001"* (Sweco Norge AS, 2011). These routines outline the purpose of the routine, the allocation of responsibility for routine compliance and the associated documentation requirements, and they are the subject of internal audits and controls. For example, the routine for the initiation phase (which is a sub process to the assignment process) sets requirements for the realization and documentation of the request for tender, tender documents, contract with client, risk assessment, assignment registration and contracts with subcontractors. During an internal audit, then, whether or not these documentation requirements are met is determined.

For the assignment process, the mandatory documentation requirements for each phase is summed up in the Quality Control Plan for Assignment Managers (QCP, see appendix 2), which serves as a checklist for assignment managers. In addition to the mandatory requirements (which are marked with color), the Quality Control Plan contains a number of optional or recommended documentation requirements that may or may not apply to the assignment in question.

In addition to the routines, the system contains manuals that describe different procedures. These are typically 1-4 pages long. In sum, the manuals with appendices constitute the Quality Manual, which is divided into three levels or chapters: the quality hand book (including for example organizational charts and the authority matrix), administrative procedures (including for example manuals for nonconformities management, filing and internal audits) and assignment procedures (including for example manuals for sustainability management and change orders). According to

Sweco Norway's president, these manuals have their origins in Grøner's quality management system and were incorporated into Sweco Norway's quality management system when Grøner was acquired by Sweco.

The tools are a number of different aids, such as for example checklists, calculation spread sheets or templates. They can be generic (applicable to all kinds of assignments) or adjusted to assignments of different size or different technical disciplines. There is, for example, the possibility of searching for division specific tools. The arrangement of tools is currently undergoing vast changes in order to make them easier to find and to secure that they are up to date. These changes will be described more thoroughly in section 6.6.3.

From the above, it can be argued that the system's scope reaches beyond that of merely satisfying the requirements of ISO 9001 or ISO 14001, which supports proposition 5. The findings in sections 6.1 and 6.2, which indicated that the system is motivated by both internal and external motives, as well as by a desire to realize a number of internally oriented benefits, support this view of the system as something more than simply a response to certification requirements.

The assignment process

The assignment process (depicted again in figure 13) is the most prominent feature of the QMS, and guides the assignment personnel, especially the assignment manager, through the phases of the project, which are Initiation, Planning, Execution, Control and Close. As can be seen from the arrow below, it is made clear that the ultimate goal of the assignment process is client satisfaction.

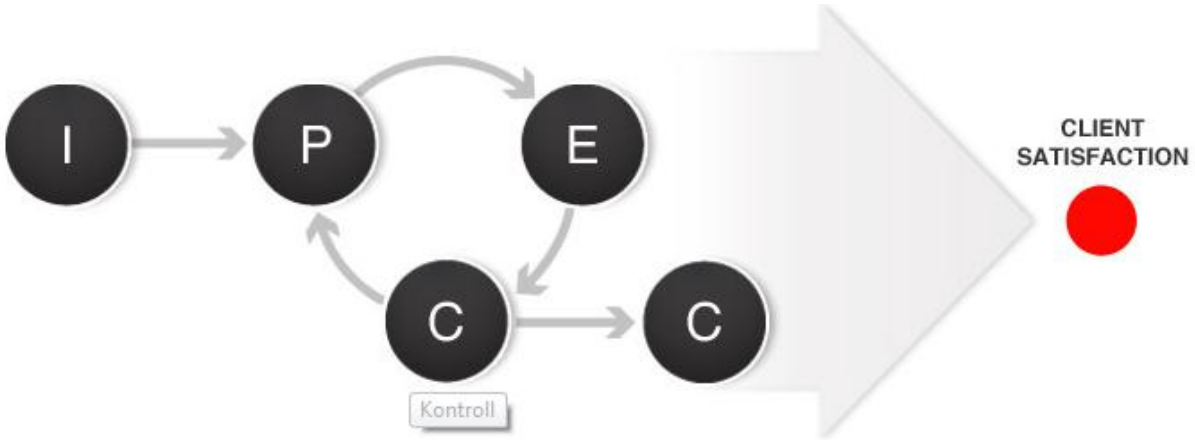


Figure 13 Assignment Process in the quality management system (Sweco Norge AS, 2011)

However, closer inspection of the assignment process will demonstrate that it also incorporates aspects of several other generic business processes:

First of all, the Demand Creation process is entangled in the assignment process: For example, Sweco wins many assignments by submitting tenders, an activity which is covered more or less extensively in the Initiation phase. Furthermore, mainly selling business-to-business services, Sweco's most powerful marketing tool is perhaps the reputation the organization gains from successfully executing assignments. Therefore, while achieving client satisfaction is the output from the Demand Fulfillment Process, it is simultaneously a prerequisite to the Demand Creation Process. Moreover, the quality management system requires that experiences made in the projects (both those internal to the project group and those made by the client) are gathered and stored and that that project references are generated when appropriate. Therefore, the quality management system governs important aspects of both Demand Fulfillment and Demand Creation Processes.

Notably, there are aspects of Demand Creation that are kept quite separate from the QMS, such as for example marketing and branding activities. These are, however, usually treated more or less extensively elsewhere in Sweco's intranet. Therefore, although the remainder of the intranet is not explicitly made to be a part of the QMS, it can be argued that the guidelines etc. that exist there are still somewhat managed in some form of a business management system, although not as an element in the certified part of sweco@work.

Sweco is a project organization, which can be defined as an organization that is set up with its exclusive focus aimed at running projects (Pinto, 2010, p. 66). This being the case, the assignment process is where both the majority of value is added in the organization, as well as where the majority of resources are spent. The generic Resource Management process, therefore, is also interconnected with the assignment process, although perhaps quite indirectly. For example, appropriate allocation of human resources to the assignment must be managed in several activities in the assignment process, such as in the writing of tender documents, in scheduling, in planning, in results management and in maintenance of measuring instruments.

As with the Demand Creation process, there are aspects of the Resource Management process that are not treated in the QMS, per se, such as hiring of personnel. Again, several of these aspects are covered elsewhere in the intranet, suggesting that it is managed by some sort of a business management system but not in sweco@work.

The support processes

In sweco@work, there are a number of processes called support processes, which include processes that deal with organizational structure, attestation and signature authorities, environmental issues, work environmental issues, measuring instruments, purchasing and sweco@work administration and information.

In general, these processes are perhaps less concerned with Demand Fulfillment and more concerned with Resource Management and achieving compliance with different aspects of certification requirements.

The business development process

The business development process include sub processes that deal with policies, objectives, knowledge management and human resource development, internal audits, system development and improvements and management review. Here, several aspects of the generic Mission Management process are treated.

Both the support processes and the business development process appear less detailed than the assignment process and perhaps serve information distribution purposes more than it accurately models these processes. This is perhaps only natural, seeing that the system is supposed to be used by the organization as a whole, while many of these processes are performed by a handful of individuals only.

Either way, it is evident that Sweco's quality management system contains aspects of all four generic business processes, implying that Proposition 8 holds true. Meanwhile, the accentuation of the assignment process and its associated outputs and objectives suggests that Proposition 9 holds true as well. Moreover, while the assignment process and the associated 'client satisfaction'-objective is made quite clear, the system does not explicitly explain how the remaining processes interact to achieve which objectives. Therefore, it must be concluded that, despite the fact that the system is

designed to be more than a mere response to certification requirements, the system is a quality management system (as well as an environmental management system) more than it is a complete business management system. As explained in section 4.2.3, this may cause sub-optimization of performance because such a quality system will not show the complete set of the organization's business objectives and associated business processes.

Furthermore, we saw in 4.2.3 that Hoyle argues that a quality system should be modeled as a business management system in order to avoid the notion of the QMS as something separate to the way the organization conducts business. There are clear signs that the QMS is seen by some as separate from the business in Sweco, indicating that Proposition 6 holds true. For example, when asked how important he saw sweco@work to executing assignments how they should be executed, one assignment manager reports *"Well, I feel like I reach my target anyway"*. Similarly, another assignment manager states:

> *"[…] it is something extra that needs to be done and that takes time. […] In the end I focus on what I need to do, the work tasks in the projects, the phone calls that come in, and thus the Quality Control Plan becomes something extra that… I do not really see it as necessary […] It becomes something extra that feels like it's done mostly to satisfy a system and not because I need it in my everyday praxis".*

When asked whether motivation is the biggest barrier against system use, a middle manager argues:

> *"Yes. That, and kind of not seeing the quality management system in its present form as a tool that is good enough to… that is, a tool that actually improves the product that is delivered. You see the system as a system and not something that adds value. […] Take the environmental check-in […], where you really just go in and produce a document and then all is well, which undermines the system when a thousand people do this and 980 out of those thousand think it is just nonsense"*

All in all, then, it seems as though the QMS in not really integrated into the business conduct of the company, at least not for everyone. Whether or not it is possible to ever create a QMS which ensures this integration is a separate issue. However, several respondents seem to think that Sweco's system could be integrated better into the business. This is further explained in at the end of this section.

The quality management system's role in the fulfillment of business objectives

Despite the fact that it can be argued that sweco@work is primarily directed at achievement of the needs and expectations of customers, it is possible to argue that it serves the function of satisfying a number of other stakeholders' needs as well. Specifically, it can be argued that customer satisfaction is a prerequisite for several business objectives such as profitability and customer retention. Sweco Norway's strategic priority areas for 2012-2013 are shown in table 4. In this section, it will be argued that the QMS may be seen as promoting more or less all of these strategic objectives.

Strategic priority	*Sweco Norway objectives 2012-2013*
Customers	*We shall be one of the industry's three major players, both regionally and nationally*
Competence	*We shall have knowledgeable employees who will ensure efficiency, quality and value creation for society, customers, employees and owners.*
Employees	*We shall be an attractive employer and have dedicated employees with high organizational citizenship and well-being, based on our values in a physically and socially (psychologically) good work environment*
Brand	*We shall appear in "our way" by profiling a distinctive brand*
Profitability	*We shall have profitable growth and be the most profitable consultant in the industry*

Table 4 Objectives and action plan for Sweco Norway, 2012-2013 (Sweco Norge AS, 2013a)

It has already been noted how increased customer satisfaction constitutes both the process outcome from the Demand Fulfillment process as well as a prerequisite for the Demand Creation process. Thus, it can easily be argued that if the QMS is designed to

increase customer satisfaction, it is also designed to increase customer retention and credibility, thereby supporting the objectives relative to 'Customers'. Several of the expected benefits mentioned in section 6.2 can be said to contribute to customer satisfaction, perhaps especially increased technical quality and better project management. While achieving customer satisfaction caters to the needs of the customer, achieving customer retention and new customers ensures revenues and thus the needs of both owners and employees.

The third category of expected benefits identified in section 6.2 was development of competence in the organization. Illustrative of this, the president of Sweco Norway states that:

> *"[…] even though I may communicate more clearly that our employees are our most important assets, what we ultimately live by is our employees' knowledge systematized, which constitutes our competence. […] So quality management is one part of the systems supporting that, ensuring that we are doing things the way we need to do them and that we are developing the competence we need."*

If this benefit is truly realized then, the system supports the strategic priority area of 'Competence'. Furthermore, competence development and retention caters to the needs of both owners, employees and customers.

The link between the third strategic area of priority, Employees, and the QMS is perhaps less apparent. However, the work environment is treated in sweco@work because the company has recently been certified for the OHSAS 18001:2007 standard, which governs management of occupational health and safety. Moreover, it can be argued that a quality management system that provides support for employees in their daily work exercise will increase job satisfaction and employee well-being. However, the researcher will not argue strongly for this link in Sweco at the present time, because, as it has been argued elsewhere in this report, the system is not necessarily seen as something that makes assignment work more rewarding.

Sweco's brand promise is "*Sustainable engineering and design"*. In the company's intranet, the following is stated about this brand promise: *"In short, we shall take an active part in realizing our customers' projects, so that they both achieve their objectives for quality and profitability and contribute to a sustainable development of society"* (Sweco Norge AS, 2012d). Clearly, well managed and executed assignments contribute to the strengthening of this brand promise. Moreover, in addition to fulfilling the requirements of OHSAS 18001 and ISO 9001, sweco@work also fulfills the requirements of ISO 14001, which governs systems for environmental management. Delivering according to such a brand promise increases the organization's credibility, and thus fulfills needs of both customers, owners and employees. Furthermore, contributing to sustainable development fulfills the needs and expectations of society.

Finally, sweco@work and the Quality Control Plan contain quite a lot of items and mechanisms that may contribute to increased profitability when applied consciously. Specifically, several of the items on the check list, such as documentation of tenders, contracts and change orders, simultaneously serve the purpose of managing and maintaining the relationship with the customer as well as promoting profitable project execution. The expected benefit category that is most closely related to profitability is perhaps improved project management. Clearly, increased profitability serves the needs and expectations of both shareholders and employees.

In summary, it seems reasonable to conclude that the utilization of the quality management system supports and promotes achievement of the organization's strategic objectives, which supports Proposition 7. However, the above discussion rests on the assumption that the system is in fact designed in a way that produces the expected benefits, i.e. increased technical quality, improved project management and improved knowledge management. However, we saw in section 6.2 and previously in this section that this view was not necessarily shared by all members of the organization. Testing whether or not these benefits are produced has not been within the scope of this study. However, as will be explained in section 6.6.4, the organization should strive to accurately measure whether or not the system produces these expected and desired benefits.

Is the system design good or not?

We saw in section 6.2 that the system is perceived by some as detached from reality and inappropriate for producing desired and expected benefits. This dissatisfaction will also be revisited several times in the remainder of this report. It is not within the scope of this study to compare the system to other systems and assess whether or not the system is good. However, there are some aspects of this issue that is worth mentioning.

First, an interesting point that has come up during interviews is the fact that while several respondents in Hedmark-Oppland express dissatisfaction with the system, top management and QA-function representatives tend to express a much higher level of faith in the system in its present form. For example, both the president, the QA-leader and the B&C division manager reported, without being explicitly asked, that they felt confident that Sweco's QMS is a good and appropriate system. This is in quite stark contrast to the opinions of several respondents further down in the hierarchy. Of course, there is the possibility that top management have promoted the system to the extent that they start to believe themselves that it is good, even if it is not. However, another possibility is that they do really see that the system is good, and therefore promote it. For example, Sweco Norway's president notes:

> *"I think it is quite descriptive that when our QA-leader assumed that role, he thought that the system was not good enough because he had worked for a number of large clients, whose systems he perceived as better than ours. […] Without having used our system in years he had the impression that our system was out of date, until he assumed responsibility for it and spent half a year familiarizing himself with it. Then after half a year he said, "Wow, what a great system we have!""*

Of course, top management also acknowledges that the system is in need of refinement and redevelopment, which is especially highlighted by the effort that is being made to restructure the profession-specific contents. However, while some middle managers and employees report feeling that the system is detached from the reality of their project work, top management seem to perceive the system as a quite

good model of how the organization performs work. For example, the president of Sweco Norway states:

> *"For me, the quality management system is a description of how we perform work and the things we shall take care of in the company, measured against certain regulations. […] then, if we find that the system is not describing how we work, we either have to do something about the system or do something about the way we work. […] [It is] important that there is a continuous updating, a dialogue in a unit, related to how the system functions, and that you dare to invite to a discussion in terms of whether it is the system that is wrong or whether they are working in the wrong way."*

From this quote, it seems that there is a will to keep the system updated and realistic. It is interesting, then, that it is not necessarily perceived that way further down the line. One possible explanation is that top management has somewhat lost the connection to the work processes in the projects - that they are not able to realistically assess how effective the system realistically is. However, both top management and representatives of the QA-function offer a different explanation. Consider for example the following quote by the president:

> *"The knowledge about the system varies. Sometimes we hear that our systems are so poor but the experience we have every time, is that those who claim so do not know the systems. Those who know the systems and use them actively are very content with the systems."*

Similarly, the B&C division manager states:

> *"[we often hear that] sweco@work is so poor and slow and this and that. But the reality is that it is a really good shell, and it has a good content, really. If you take the time to start using these things, it is very good. But there is some kind of, what do I call it, mass suggestion or attitude with a lot of people, I think, that it isn't or that it is difficult or not available… when they have not really tried."*

Again, similarly, a divisional QA-coordinator states:

> *"In my opinion [the system] is not troublesome at all. If you start using it every day as an assignment manager you find out where things are and you learn to use it. […] So I'm not really buying that. […] it is like [the vice QA-leader says], who has worked with this in several other companies, he says that our system is really good, people just do not get it."*

Another QA-coordinator offers a slightly different view:

> *"Of course, for those who have worked for many years and have had a good, working system, they probably feel that sweco@work is not a sufficient and good system. Those who have not previously done anything and start here, using sweco@work from the very beginning, adapt to the system and are usually content. If you have your way of doing things and come into sweco@work, which after all is a predetermined system, there will be things you find unnecessary, things you feel is lacking and things you perhaps thought were easier before. That is the way it will always be unless it is extremely well worked through. […]Many find [using the system] difficult. But the reason they find it difficult is that they have not used it. […] it may not be optimal, I can agree that sweco@work have a lot of deficiencies and defects, but it is not difficult"*

These findings can be interpreted in at least two different ways. One possibility is that the system is in fact pretty good, but that employees fail to realize so. It was noted in section 6.2 that Sweco have a relatively high number of assignment managers and that the project management skills are not necessarily sufficiently high among this entire sample. It is therefore plausible that many of these employees do not know the system, and therefore feel overwhelmed by it.

Another possibility is that the system really is not that good, and that representatives from top management and QA-function fail to realize this. One indication that this may be the case is the fact that several of the system 'dissidents' claim to have used the system several times, thereby countering the 'they haven't tried'-argument. If this is

the case, top management and the QA-function should take care not to automatically dismiss the criticisms (in fact, it can be argued that downright dismissal of criticism is hardly ever effective, regardless of whether or not it is constructive).

Other possible explanations could be that Sweco's employees are individualists who do not want to obey any system, or that employees feel that it is uncomfortable to use quality management systems altogether. Further attempts to pinpoint the causality here will not be made. However, a short overview of the two most common criticisms of the system will be outlined in the following paragraphs:

First, there is an overwhelmingly large number of people who report feeling that the system is inappropriately large and complicated for small projects (e.g. 5000 NOK). Therefore, many express a desire to have a more differentiated system, where there is a light-version for small projects. According to Sweco Norway's QA-leader, this has been up for discussion:

> *"[Large and small projects] are in principle meant to be handled similarly… though in reality, they shall not, I say "use your head". […] There are many who have asked for something like small-/medium-/light versions. […] We're not there yet and I'm not sure it is where we want to go… because where is the limit between small and medium then?"*

He makes a compelling point in relation to the difficulty in distinguishing between the different size projects. Because every project is unique, it is perhaps sensible to keep a uniform system and then leave it up the assignment manager's discretion to adapt it to the project at hand. However, the 'small project'-issues seems to cause a lot of frustration, at least throughout the region Hedmark-Oppland. The danger is that employees may become so frustrated that they dismiss the system altogether. Therefore, it would perhaps be useful to either bring differentiation up for discussion again, or to at least try to lessen the frustration by making it clear that there is room for adapting of the system to each project. Of course, that would lead back to the issue of the degree of adaptation that is 'permitted'. Either way, the 'small project'-issue has been brought up by nearly every single respondent in this study and therefore deserves attention. Furthermore, note that among the 8 projects under NOK 100.000

that were checked for the Quality Control Plan, none had established such a plan (see chapter 5)

The other most common criticism or feedback that has been unraveled during interviews is associated with the degree of automation in the system. Respondents envision this in slightly different ways but the common denominator is that many request a system that is more tightly coupled with how they work, such as with the assignment folder, which is the assignment's folder on the company server. Some envision this as a solution where the folder, upon creation, contains most of the items of the Quality Control Plan. That way, check lists and templates will already be in its place, ready to be filled out. The challenge in such an approach is that for several of the items, several, or none for that matter, templates are possible. For example, a contract document can take many forms depending on type of contract, type of assignment, type of client etc. Therefore, it will not be possible to attach one single contract template to the assignment folder. A slightly different approach is based on a sort of menu of templates and check lists that you select as you create the assignment folder. This would perhaps enable a more interactive and customized approach. Both these approaches are motivated by a desire to simplify the quality management and avoid spending time looking for the right document.

A third approach is oriented more towards avoiding having to deal with a large number of systems simultaneously. Sweco have different systems for quality management, economy in assignments, time sheets, travel expenses and contact information, to name a few. One common criticism, therefore, is that there are simply too many systems to deal with, and that these should be integrated to a much larger extent. Recalling figure 5, this is a valid point.

The system design and its shortcomings and possibilities will not be further discussed in this paper. However, the author would urge employees to submit their opinions in the 'Experiences and Improvements' feature in sweco@work. Perhaps even more importantly, the author would urge QA-representatives to receive opinions, criticisms and feedback with an open mind and to invite employees to actively participate in the dialogue concerning the QA-system.

6.4 Management commitment

Recall the following propositions:

Proposition 10: Both top management and middle and lower management is Sweco display signs of commitment to implementing and maintaining the quality management system

Proposition 11: Simultaneously, there are some signs of symbolic change in the organization

Proposition 12: There are differences between the level of ambition on the national and regional levels, and the regional levels display more signs of symbolic change

In order to illustrate the strategic setting though which Sweco's managers maneuver, this section will begin with a brief outline of the organization's strategic objectives relative to quality management.

In the document 'Goals for the Sweco group' (Sweco Group AB, 2013a), which can be found in sweco@work, four strategic objectives are listed. At the very top of the page, the strategic goal of 'Profitability' is defined as *"Sweco will strive towards an operating margin of 12 %".* Thereafter, one can read that *"The following directives shall be in each business plan and be broken down further into each Business Area organization"*, under which directives are stated for quality, environment and health and safety, respectively. For quality, the directive reads; *"Sweco shall strive towards always having satisfied clients and good profitability through continuously raising the quality of the services delivered to clients".* Thus, while the document can be interpreted as placing profitability at the top of the strategic priority list, quality is seen as another strategic priority area. Presumably, quality is seen as a means of ensuring and sustaining profitability.

For Sweco Norway, the strategic priority areas and associated objectives for 2013 have already been presented in table 4. The complete overview of the objectives, including actions and measurement parameters, is given in appendix 3. From this, it can be seen that the actions most associated with quality management are 'Strengthen competence in assignment management', and perhaps 'Increase revenue from identified key clients'. sweco@work, per se, is not mentioned directly.

Going into the divisional objectives and action plans, objectives materialize that are more directly associated with the quality management system. For example, the strategic action plan for Building & Construction emphasize, amongst other things; increased use of customer satisfaction surveys; development of the division's trade-specific platforms in sweco@work; and improvement of assignment planning. Similarly, for the division Water, Planning and Transportation, the following actions are mentioned, amongst others; development of the division's trade-specific platforms in sweco@work; increase competence in assignment management; and increased focus on assignment planning and start-up meetings.

In summary, it can be argued that there is an emphasis on improvement of quality management in the organization. At the same time, it can also be argued that there are other strategic priorities that are given similar or even higher importance. Thus, the strategic environment in the organization does promote and allow for managers to have an emphasis on quality management, but it is not made top priority. This is perhaps only natural, as management has a lot to do with prioritizing between a number of different strategic focal areas.

6.4.1 Top management commitment

Among the respondents of this study, both the president of Sweco Norway and the Building & Construction division manager report being committed to quality management. For example, the president states that:

> *"[Quality management in Sweco] is very important […] it's ok to make mistakes sometimes but the system must be built up so that the mistakes are detected. When talking about quality, it is very easy to relate it to projects, but it is more than projects. It goes for all that we do and all that we are working on. […] It is important for management [to convey demands and expectations for the use of the system]. And I also think that my attitude towards the system and its use is important."*

Similarly, the B&C division manager states that: *"[Quality management] is alpha and omega. There is nothing more important in my opinion".*

Presumably, no manager in a knowledge-intensive company would admit to thinking that quality management is unnecessary or unimportant. However, pronouncing that quality is important is not necessarily the same thing as signaling that importance throughout the organization on a daily basis. Nevertheless, there are signs that the interviewed representatives of upper management take quality management seriously. For example, in a previous quote, a QA-function representative reported having the impression that the new president showed a renewed interest in quality management. Another example is the fact that the B&C manager toured Sweco's offices before the startup of this case study, preaching the necessity of improving assignment management practices. In the interview he noted the following:

> *Division Manager: "I have been every place in the division, saying the same things"*
>
> *Researcher: "How important is it to go around saying them?"*
>
> *DM: "I have asked myself the same question. It's not necessarily that important, if you still see that it does not get done. […] You just need to push, I think, from management. I need to push and the regional managers need to push and the group managers need to push… until it sticks. So it's a never ending story."*

Furthermore, the same divisional manager is frequently being mentioned by respondents as a sort of champion of a restructuring of the profession-specific tools in sweco@work, a restructuring that one hopes will make the system more up-to-date and relevant.

Interviewed representatives from lower hierarchical levels also report feeling stronger signals from top management regarding quality management. For example, a QA-coordinator in Hedmark-Oppland states that:

> *"I think Sweco's management has become clearer in communicating that quality assurance is important. I feel that in the last two or three years, quality assurance has gained a larger focus than earlier on. Both the B&C division manager and top management are much more concerned with*

ensuring that we have genuine documentation throughout the production phase. So I think we are going in the right direction."

Similarly, a group manager in Hedmark-Oppland states that *"I see the [national level of ambition for use of sweco@work] as high. I mean, it is something that everyone is required to use, so I see that as there being focus on that. Absolutely."*

Meanwhile, top management is in a position where they have a limited opportunity to communicate the whole spectrum of important messages and therefore need to prioritize. What one chooses to communicate, then, will depend on what is most important or urgent. Among respondents, there are those acknowledging that top management could have conveyed an even stronger focus on quality management. For example, the B&C division manager notes:

"You will never get us in the management to say that we shall deliver something that is at the expense of quality. We shall follow our quality management system regardless of remuneration. […] but I think perhaps that it feels like a pressure throughout the organization, that economics is the most important thing. […] That is what receives the most focus, that is what we talk about in speeches and that is what we refer to, it is utilization rates, economical results and percentages, not whether there are made many mistakes, the mistakes we have avoided or how many audits we have done"

Even though it perhaps still exists untapped potential for top management commitment, it is reasonable to conclude that such commitment exists in Sweco. This means that there should theoretically be good conditions for management commitment further down the line as well.

6.4.2 Middle management commitment

Middle managers (region and office managers) in the region Hedmark-Oppland generally express a quite pragmatic approach to the quality management system. Overall, they report regarding quality management as very important. In their interviews, however, they tend to get very quickly into talking about dissatisfaction

with the system to a varying degree. Therefore, several managers acknowledge that they feel that it is somewhat difficult to promote the system in their units. For example, consider the following interview excerpt:

> *Manager: "I feel that the system is there for the sake of the system. That happens when the auditor sort of is the only one you are trying to please. [I feel] that it is not value adding compared with having a tool that satisfied the demands… the system demands, of course, but at the same time became a natural part of running projects."*
>
> *[…]*
>
> *Researcher: "But does that make it difficult for you as a leader to demand that it gets used, when you yourself do not think it is optimal?"*
>
> *M: "At least it gets more difficult to demand it with a certain degree of empathy. I know what is on me, so obviously I demand that is gets done. But that's not to say that I'm the best motivator for people to do it. There's a slight difference there that is quite large. So I'm more in a place where I push for the minimum, and then I say in projects of a certain size that we should do the rest of it"*

The following interview excerpt from another respondent is also illustrative:

> *Researcher: "What is you role [as an office manager] in following up the quality management system in your unit?"*
>
> *Manager: "Well, I don't really have a specified task in relation to that, because it is the group managers who are closest to the employees in their groups, so I guess I am in sort of a role in between in that respect. […] But I work… lately, I've perhaps had a utilization rate of 85 % in projects, so you can imagine how much time… so it's mostly about quality assurance of my own work. […] I really should have had more time released for management tasks, but that's how it is. […]"*

R: "What about in the management group in the region, are you working to improve system implementation and… is that on the agenda?"

M: "Yes, it has been. There are many who have pushed from the bottom up in terms of getting a better system"

R: "Getting a better system or using it as it is?"

M: "Both, but first and foremost to improve it, because we saw that there were some weaknesses in the system when we started using it and there is still a way to go. But at least there has happened something on the top management level because [the regional manager] took [the feedback] to a higher level in the system where it has been addressed. And now I think efforts are being made, and have been made, to develop these profession-specific platforms. […]"

R: "But would you say that, in a way, there is more focus on a desire to change the system than implementing it in its present form?"

M: "Yes, there might be something there. I think that is a good point."

[…]

R: "Now we've talked a bit about the desire for the system to be different and better but is it your opinion that even with the system being in its present form, it is still important to use it and…"

M: "Yes, absolutely, we have to. So it is not like I think that the system is so bad that it cannot be used, for that is not the case. There are good things there. It is more about cleaning up and that the things that are there are important, and to make sure that the templates and that sort of things are up-to-date […]"

From these excerpts, three interesting inferences can be made: middle management in Hedmark-Oppland need to prioritize, quality management follow-up is largely allocated to group managers, and middle managers in Hedmark-Oppland do not perceive the system as optimal. In the following, these inferences will be discussed.

First, as with top management, middle managers in Sweco are generally very busy and therefore need to make priorities when it comes to what to focus on and what to communicate. This is also illustrated by the following excerpt from the interview with a middle manager:

> *Researcher: "What about getting the employees in the region to use sweco@work, is that something you discuss in management meetings for example?"*
>
> *Manager: "Yes, we do. When you and [the local QA-coordinator] held those seminars, it was originally initiated by us, that there was a need. So it gets registered in those forums and we try to address it. So when you finish your thesis I think we will focus on this again […]"*
>
> *R: "What about the cooperation between regional line management and [the local QA-coordinators], are you talking about these things?"*
>
> *M: "No, we do not really talk about it that much, but that is because one day takes the other… I mean, it is incredible how a day is; you come in and think that you will do something, and then you have done something else completely when the day is over, and that is how it is nearly every day. And I think that's how it is for many, so you need to be very conscious and set aside time to be able to follow through."*

The need to make priorities is also acknowledged by the B&C division manager, who states that

> *Division Manager: "[…] management is about prioritizing. […] If you go into sweco@work and look at a job description for a group manager or regional manager or assignment manager, there is an incredible amount there that shall be done. I think you still need to use your head and then you need to consider that some things are more important than others. Even if according to the system, you are supposed to do everything.*
>
> *Researcher: "But is quality assurance something that should have a high priority?"*

DM: "Yes. There are probably other things that you shouldn't spend as much time on that we do spend time on. We are a large organization… there are many that demand a lot from us, and we are large for better and for worse. Mostly for the better though, but there are many time thieves in the system, and we need to be a little hard on those."

In summary, it is clear that Sweco's managers, throughout the line, face challenges in determining the relative importance of their many tasks and responsibilities. The question they need to ask themselves in this case, then, is how important it is to focus on quality management. There is no easy answer to this question, nor is finding it within the scope of this paper. However, it can be argued that if the previously presented findings in this paper – that the system is largely motivated by a desire to achieve performance improvements and that the system is there to maintain and develop competence, which is the core of the company – are true, then quality management should be of high importance.

Furthermore, management should be aware of the powerful signals that they convey in their units, whether they are conveying them deliberately or not. There are signs of the employees in Hedmark-Oppland not feeling a significant degree of demands and expectations relative to quality management system use from their managers. For example, one assignment manager notes that: *"In Sweco as a whole, I guess there is an expectation for us to use [the system], but here in Hamar there are a little more… shortcuts perhaps".* The following interview excerpt from another assignment manager is equally illustrative:

Researcher: "Is it your perception that [system use] is demanded of you?"

Assignment manager: "No, not really, not locally. […] I've been to the assignment management course, where it was a central part. And I pull myself together when there is an all-out effort or there is an audit coming up, then I do what I need to do, and then I put it to rest again. And it gets, well, not forgotten… It has something to do with whether others emphasized it here, but it becomes something that is coming from the corporation centrally, and then out here we have our own things to do. […]

R: "So then do I understand you correctly in that you are saying that you perceive the expectations on a national level different from those on a local level, in relation to Quality Control Plan use?"

AM: "Yes. How good they are in Oslo in general, I don't know, but every time [the QA-leader] raises the flag, I think "yes, I need to pull myself together and use the plan". Then locally there is little talk about it. […]"

R: "What about from the management in the region then?"

AM: "No."

R: "Should there be more emphasis on these things?"

AM: "I do what is asked of me when it comes to these things, so if there is a demand locally, if [my manager] tells me that I SHALL use it, then… which he will do if I ask him, if I do not ask him he will not say anything… so I do not perceive there being a demand to use the Quality Control Plan whatsoever. What there is a demand for, and that is always emphasized, is peer review."

Similarly, yet another assignment manager notes:

"There is an ambition [locally] to use it, there is. But it's perhaps more the ambition that… that we do our assignments well in terms of time and quality, so that if you manage that… You can say that the most important thing is self-inspection and peer review"

Regardless of whether or not using the quality management system should be of higher priority in the region, it is clear that several employees really feel that it is not emphasized. If there is a desire to increase system use, then, this is a quite obvious area of improvement. This is also acknowledged by several respondents. For example, a divisional QA-coordinator states that:

"I think it is very important for the line management as a whole to focus on QA and quality. It is not something that QA-coordinators can assume responsibility for themselves. It is important that there is cooperation and

that QA is a support function for them. It is they who need to do the work, perhaps not physically, but they need to apply the pressure and talk about it and emphasize it"

The second inference from the previously presented interview excerpt has to do with the allocation of responsibility for quality management system follow-up in the managerial hierarchy. It was noted that much of this responsibility is placed on group managers, which is confirmed by the following interview excerpt:

Researcher: "What is you role as [regional manager] in relation to promoting system use, set demands and get people to use it?"

Regional Manager: "Well, my task is multifaceted. […] The main challenge is to motivate people and provide enough work so that we have work for everyone and make money… if we do not have that it is all miserable either way. […] But of course, that depends on us, once we have gotten the jobs, doing them right so that the customer returns. So it is all interrelated […] But my role is perhaps much more about taking part in tender work and making sure that that is quality assured, that is the most important thing. And then I need to try to let the group managers govern that people are using the QMS"

R: "So the group managers play an important part in that?"

RM: "Yes, I'm not able to… we are over 50 employees in our unit, so there is not much time for me to spend with each single person. But of course, the motivation needs to trickle from the top down"

Clearly, group managers are given quite a lot of responsibility for ensuring that the quality management system is used. This is perhaps quite appropriate, considering both that these people work very closely with the employees in their units and the previously mentioned fact that managers continuously need to prioritize. However, as was noted by the regional manager, middle management should still be aware that they play a part in signaling whether or not the quality management system is

important. For example, consider the following interview excerpt, in which a divisional QA-coordinator discusses another unit in Sweco Norway:

> *Researcher: "[…] How important is it for a departmental manager to, I want to say, back you up and signal that this is important?"*
>
> *QA-coordinator: "It means everything, because who am I to stand there and say that "we need to do this and it works like this" if he does not, well, talk about it at all? I do not have the same respect that he has. So it means everything that the managers back us up and put this on the agenda. […] This is something that we focus on in the QA-forum at the time, when we go around doing internal audits, we are focusing on the managers. We can see that that is where the problem is, that when it does not work there, when they are not using it and not understanding why they should use it, nothing happens further down the line."*

Therefore, it is very important that even though group managers and the assignment managers themselves are largely put in charge of ensuring quality management system use, middle management need to be aware of the signals they convey. After all, they set the tone for the unit, both by dissemination of information regarding for example objectives and focal areas and by leading by example. For example, before the start-up of this case study, the researcher, together with a local QA-coordinator, held a training seminar in the region with the purpose of increasing system knowledge. It varied whether middle management participated in these seminars. For example, one manager hurried out the door right before the seminar, excusing himself by saying: *"I've got a meeting. Plus, I already know about these things, so there's really not a need for me to be here, is there?"* Naturally, a manager will not have the opportunity to participate in every joint activity in the unit. However, it is worth considering the signal effect that such behavior may have. In another of the seminars, a representative from regional management participated very actively, asking questions and making notes. Presumably, such behavior will convey a much

stronger signal to employees that the subject matter of the seminar is something that is relevant and of importance.

Finally, it has already been noted that middle management in the region Hedmark-Oppland tend to discuss the quality management system very much in terms of the improvements they envision or desire for the system. On the one hand, this can be interpreted to mean that these managers are genuinely concerned with contributing to the organization having a good and appropriate system. In the words of a middle manager: *"I think it is positive when those who are involved in projects are concerned with improving the system because they do not think it is good enough as it is. They could have simply not cared and just said that "someone else will have to deal with this"".* This also goes for middle management's involvement in system feedback. After all, the feedback process is an important means of keeping the system up-to-date and an honest debate regarding the appropriateness of the system is healthy. However, there is a danger that when managers face the combination of limited time, multifaceted demands and a lack of faith in the system, they may simply choose, deliberately or not, to more or less neglect it.

6.4.3 Group manager commitment

Among the three group managers interviewed in this case study, all three report feeling increasingly confident in the system and its use. There are signs of these managers taking charge in their units. For example, one group manager reports:

> *"I'm trying to motivate the group to use the Quality Control Plan and I have been repeating that they need to verify that they have a contract or an order confirmation. So I'm trying to repeat those things. That's kind of our focus at the time and has been for a while."*

Similarly, another group manager states that:

> *"[Quality management] is seen as important in the region. I can tell when we have group meetings and that sort of thing… quality management, how we do it and routines etc.is a recurring theme. […] There is a desire to do*

things better, to do things more similarly. […]We've been focusing on this now. We take it one step at the time; we're trying to get routines up and running one at the time."

The group managers also report that they feel that there could be an increased focus on these issues from their superiors. For example, one group manager states that:

"I feel that [management] could have placed stronger demands on [system use]. I feel that they have become more aware of the issue, that, in a way, if they do not place stronger demands on it from the division level and downward the pressure is diluted a little for each level you go down in the hierarchy. […] When the pressure is not there, and you don't completely agree with the system, you end up not using it."

Similarly, another group manager states:

"I think that we should have more focus on [the quality management system] here in Hamar. You talked about doing a light version of internal audits or training or something. That would be good. I think it is ok to be reminded once in a while."

It is definitely a good sign that group managers are both expressing a will to work on system use and a desire to see an increased focus on these issues in the region and in the organization as a whole. Interestingly, even though group managers, like the middle managers, express that the system is not optimal, they generally express less dissatisfaction than middle managers. Notably, two out of three group managers have recently completed the assignment management course, in which the QMS is a central element. Perhaps they therefore feel a burst of confidence in the system and its potential benefits.

In summary, both top management, middle management and lower managers display quality management commitment, which supports Proposition 10. Meanwhile, there are quite clear signs of the level of commitment and ambition being lower on the regional level than on the national level, supporting Proposition 12. In terms of symbolic change, there is not really strong evidence for such on the national level,

except for the reference to external motivation in one of the quotes of section 6.1. Proposition 11 can therefore not unequivocally be accepted. It can be argued, however, that symbolic change to some degree exists on the regional level, which again supports Proposition 12. An interesting question, then, is whether top management reinforces this symbolic change by conveying more subtle signs that have not been detected during this study. For example, the B&C division manager reports that:

> *"Perhaps we are simply not pushing enough, that we do not emphasize it enough. In the division right now, we place an enormous emphasis on marketing and customers because we have been delivering slightly worse numbers. So then that becomes the… It is really something we should talk about more. It is the same thing with assignment management, which we do talk about a lot. But what we are doing about it, that is perhaps more difficult to see."*

It is quite possible, therefore, that top management conveys signals to middle management that there are matters that are more urgent than quality management, even though they are committed to quality management in general.

6.5 Alignment with strategy, structure and culture

Recall the following propositions:

Proposition 13: Sweco's quality management system is aligned with the organizational structure.

Proposition 14: Sweco's quality management system is aligned with the organization's strategic dimensions such as vision, mission and strategic objectives

Proposition 15: Sweco's quality management system is aligned with aspects of organizational culture such as values.

6.5.1 Alignment with business model and organizational structure

On Sweco Group's home page, the following can be read about Sweco's business model:

> *"The business model is based on simplicity and client focus, where the idea is that it should be easy for clients to do business with Sweco. For that reason, the Group has a decentralized and client-driven organization. The individual consultants form the hub of operations, and it is their work and attitudes that transform the company's aggregate knowledge, experience and creativity into tangible benefit for the clients."* (Sweco Group AB, 2013d)

The decentralized model is indeed very evident in Norway, where there are offices throughout the country. The geographical structure, therefore, is quite dispersed. In terms of hierarchical structure, the organization has a quite limited number of levels. In office locations in larger cities, where all or most divisions and disciplines are represented, the structure is organized in departments, where the department managers report directly to their division manager. In the departments, group managers are the front-line managers and report to the department managers.

In more geographical remote locations, such as in the region Hedmark-Oppland, the organizational structure is slightly different. Here, the group managers report to the regional manager, who reports to the divisional manager. In addition, there are office mangers in each location, who reports to the regional manager. These managers are strictly not line managers, but rather middle manager. However, office managers can also be group managers.

Sweco Norway can be viewed as both a single business unit and as a selection of business units, depending on how the businesses are defined. According to De Wit & Meyer (2010, p. 241), *"a business is a competitive arena where companies offering similar products serving similar needs compete against one another for the favour of the buyers. Hence, a business is delineated in both industry and market terms".* For example, we could define the different divisions as separate business units, or we could define different departments as separate business units. For simplicity, however, we will treat Sweco Norway's different locations as its business units. That way, we assume that each geographical location is somewhat divided off from the rest of the organization in order to be able to pursue its local opportunities and strengths. The

region Hedmark-Oppland, then, is treated as a strategic business unit. If our unit of analysis were located in larger office, a division into business units by division or department would perhaps be more convenient.

While the rationale for differentiating the business units is to allow each unit to optimize its strategic performance and ensure responsiveness , the rationale for keeping them under one corporate 'roof' is to reap synergies. According to DeWit & Meyer (2010, p. 306), integration can be achieved by three means: centralization, coordination and standardization. For Sweco Norway, centralization is not an available option. Therefore, the organization may use coordination or standardization, which it does. Coordination relates to the orchestration of work with the purpose of operating as a coherent whole (De Wit & Meyer, 2010, p. 306). In Sweco, this is perhaps most evident where projects are executed in cross-discipline and cross-location teams. For example, if an assignment requires the use of human resources from both Oslo and Trondheim, those locations must coordinate to ensure that those resources are available. Standardization, on the other hand, relates to the standardization of resources,activities and/or product offering characteristics with the objective of achieving benefits such as economies of scale or rapid competence development (De Wit & Meyer, 2010, p. 307). In Sweco, the quality management system is an important standardization mechanism. For example, the system ensures that employees will recognize project management practices or discipline-specific pracices when working on cross-discipline or cross-location assignments. Increased multidisciplinary work has been a pronounced strategic priority in Sweco, in which standardization and thus the QMS plays a central part.

In applying integrating mechanisms, the organization may choose to use two organizational means: control and/or cooperation. In terms of control, the organization can choose a financial control style, a strategic control style or a strategic planning style (De Wit & Meyer, 2010, p. 308). In Sweco Norway, business units can quite easily draw upon each others compentece and other resources, and cooperation is therefore quite widespread. When it comes to control, both the financial control style (where control is exerted by the use of financial objectives) and the strategic control style (where control is exerted by setting of strategic objectives) are used.

Meanwhile, as the business model suggests, business units are left with quite a lot of autonomy to manouver within the boundaries of the strategic objectives given from a higher level.

It has already been argued that the quality management system serves as an integrating mechanism between business units in Sweco Norway. Given the decentralized and relatively autonomous nature of the organization, such integration is important in order to realize the potential synergies between business units. It can be argued, as one interview respondent did, that the system does not necessarily ensure development and cementing of compentence throughout the organization to a sufficient degree – that it does not suffice as an integrating mechanism. Hopefully, however, the restructuring of discipline-specific contents will have a positive effect in that regard. Moreover, integration is applied by use of quite moderate control mechanisms in Sweco (as well as by use of cooperation). The question, then, is whether the mode of control underpinning the QMS is coherent with these control mechanisms. As discussed several places in this study, there are differing views in the organization of the QMS and whether or not it is bureaucratic, realistic and appropriate. Regardless, the author will argue that the the system's mandatory requirements that pertain to assignments are both of a quite limited number and relevant in most assignments. Therefore, it is reasonable to argue that the system does not deprive assignment personnel of discretion and autonomy. All in all, it can be concluded that the system is quite well adapted to the organizational structure of the organization in terms of integration mechanisms and mode of control, suggesting that Proposition 13 holds true. However, as will be explained in the following paragraphs, interviews revealed that there are challenges associated with the cooperation between the QA-function and line management, which in many regards is an aspect of corporate structure.

The QA-function

In section 4.2.4, it was argued that down-the-line management commitment is a prerequisite for successful QMS implementation. A related concept, which is also

related to organizational structure, is the support function that helps the implementation and maintenance of the system – the QA-function.

The QA-function of Sweco Norway is divided into three levels: the QA-leader and assisting QA-leader, the divisional QA-coordinators and the local (office or department) QA-coordinators. Combined, the upper two levels constitute the QA-forum (see figure 14), which consists of 7 individuals. There are about 25 local QA-coordinators. Smaller offices have one coordinator, while a coordinator at a larger office is responsible for one or more departments. All three levels combined is denoted the QA-group.

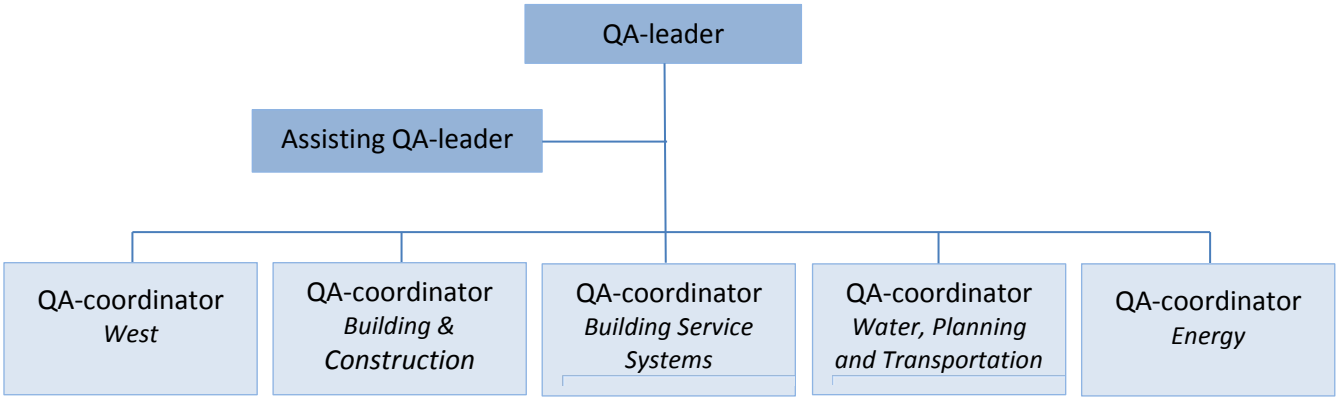


Figure 13 The QA-forum (Sweco Norge AS, 2011)

The QA-leader reports to the management representative (according to ISO 9001) and to Sweco Group's QA manager in Sweden (see figure 15). The QA-leader's responsibilities include (Sweco Norge AS, 2012c, p. 2):

- Update, control and approve common routines in accordance with the Management System and give information about changes
- Develop yearly general revision plan
- Present QA-system objectives achievement at the management review
- Suggest action plan, including measures, to obtain the company's overarching objectives
- Monitor QA-system feedback and present it at the management review.

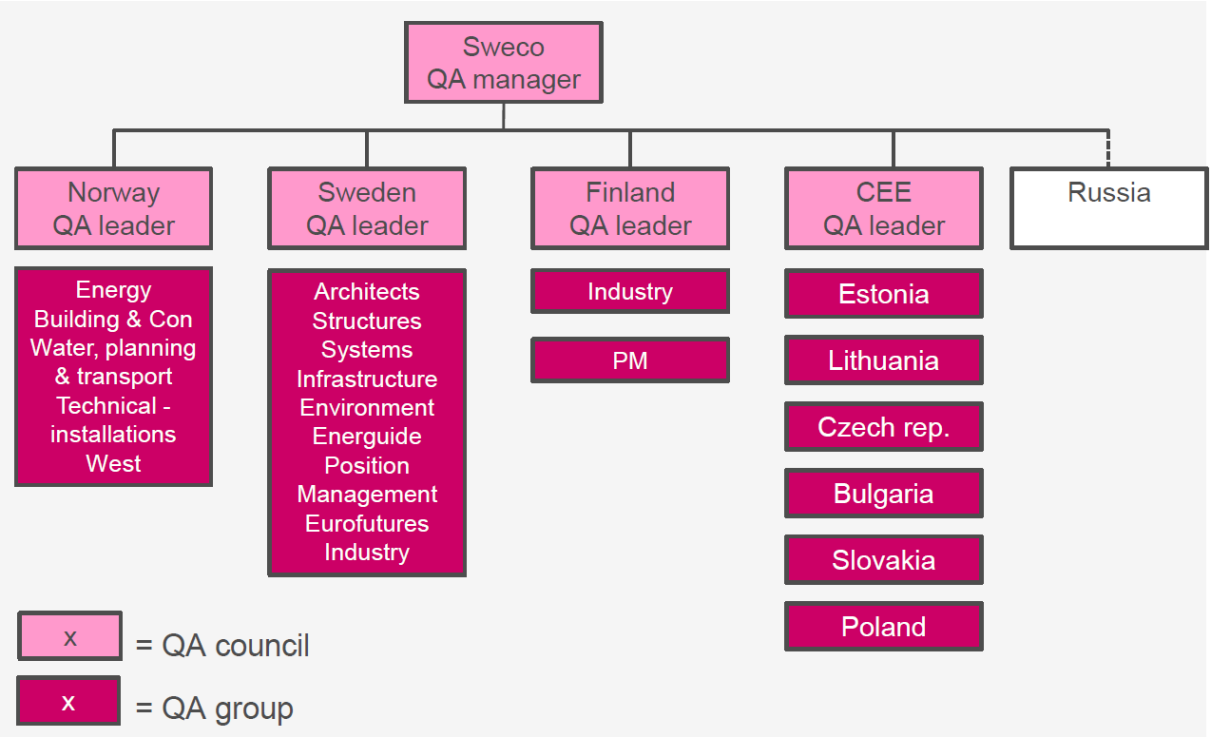


Figure 14 Sweco's international QA-group (Sweco Norge AS, 2011)

The divisional QA-coordinators report to the QA-leader and their responsibilities include (Sweco Norge AS, 2012c, p. 2):

- Maintaining the division's specific manuals, tools and checklists (although some of this responsibility will be put on the disciplinary managers in the future)
- Perform internal audits initiated by QA-leader
- Ensure that division specific manuals, tools and checklists are discussed during divisional gatherings

The local QA-coordinators report to the QA-leader and the divisional QA-coordinators and their responsibilities include (Sweco Norge AS, 2012c, p. 2):

- Planning, executing and reporting internal quality controls in the unit
- Monitor QA-system feedback and report this to QA-leader.

From the above, it is evident that the QA-function is a support function, leaving the responsibility for ensuring QA-system use with the line managers. It is quite natural and appropriate that the responsibility for QMS follow-up is placed with line management. Put in the words of Sweco Norway's president

> *"It could hardly be done differently, because if you had built a QA-function that was to have the responsibility…. That is a responsibility you cannot take away from the line manager, who holds the resources and develops the competence in the company. And in my head, the QA-function becomes a control of whether the line manager succeeds in that competence development."*

As long as line management wield this responsibility firm-handedly by displaying commitment to the QMS, the QA-coordinators' tasks are really quite straight-forward. However, as it was argued in section 6.4.2, this is not necessarily the case. The QA-coordinator's tasks, then, become more complicated, because he is no longer a mere control and support organ but also needs to be a persuasive ambassador for the quality management system. Previously presented quotes have illustrated how a QA-coordinator may need support from line management to get employees to buy into the system. This can be explained by the notion of different forms of power. According to Bolman & Deal (1984, p. 116), there are five significant types of power: authority, expertise, control of rewards, coercive power and personal power. While a line manager typically will have authority, expertise, control of rewards and perhaps even coercive and personal power, a QA-coordinator will at best have expertise and personal power. Clearly, without sufficient back-up from line management, the QA-coordinator is more or less left with his personal characteristics as his only weapon. This difference between line and staff authority is well known from literature. For example, Hitt, Middlemist, & Mathis (1989, p. 232) note that *"staff specialists frequently lack command authority over line managers. They must rely heavily on their personal persuasiveness to "sell" their expertise to line managers".*

On that basis, it is reasonable to argue that in order for the distribution of responsibility between the QA-function and line management to function well, line management needs to be both committed to the QMS work and to cooperate closely with the QA-coordinator. There are signs of that cooperation not functioning optimally in the region Hedmark-Oppland, as well as in other units in Sweco Norway. Consider the follwing interview excerpt from an interview with a divisional QA-coordinator:

Researcher: "My impression is that it varies how good line managers are at [taking responsibility for QMS follow up], is that your impression as well?"

Divisional QA-coordinator: "Yes. […] and it is the knowledge that is lacking, plus the attitude for some, it is both. When it comes down to attitude it is even worse, when you don't understand why we should do this, it becomes quite hopeless sometimes. And then you transfer those attitudes to your employees, because things are being said that shouldn't."

Similarly, a local QA-coordinator notes that:

"I feel that I am on the outside [of the regional management]. I don't think that there is a lot of contact with management when it comes to quality management in particular, only when I bring it up myself. It's not really emphasized and there is not really a lot of pressure on us to implement the procedures."

The same respondent goes on to note that he is not consistently invited in meeting activities in the region. This is interesting, because it can be argued that in order to be an asset for the QMS follow-up in the region, the QA-coordinator should cooperate closely with management.

One illustrative example that may suggest a lack of cooperation between the QA-coordinator and the management in the region Hedmark-Oppland is the occurrence of internal controls (local or 'light' versions of internal audits) in some of the locations in the region. These are meant to be initiated by the QA-coordinator, who convenes the unit manager (region, department or office) to a meeting at the start of the year to discuss the number of controls that are to be performed and whether there are special themes that need extra attention. In these meetings, relevant themes for department or office meetings are also discussed and scheduled. In an ideal world, the QA-coordinator would convene the meeting, and the unit manager would come prepared with thoughts on focus areas etc. Moreover, if the meeting notice had not arrived within a reasonable amount of time, the unit manager would contact the QA-coordinator and demand that the meeting was scheduled. In Hedmark, there are no

registered internal controls in the years 2010, 2011 and 2012, suggesting that these meeting have not taken place, nor that they have been requested by the unit manager. Summing up, the following quote by the B&C division manager is quite illustrative:

> *Researcher: "I've understood that the QA-group is sort of a support-function, wile the responsibility for system follow-up is allocated to line management. In your opinion, are they adept at putting it on the agenda and make demands and expectations?"*
>
> *Division Manager: "I don't really know what to say. You have allocated it to someone, and you perhaps expect them to take care of it, you know. You allow it to become an excuse for inaction for the line. I wouldn't disregard that. But I'm not… I mean, it is not unclear where the responsibilty lies."*

Thus, it can be argued that in order for the distribution of responsibility between QA-coordinators and line managers to function, line managers need to actively assume their share of the responsibility by displaying commitment. A related concept, however, is the degree of commitment in the QA-coordinators themselves. Seing that these are staff that need to rely on their own expertise, personal authority and persuasiveness, they need a certain degree of stamina and determination, especially in settings where line management are preoccupied with other objectives than increasing QMS use.

In Hedmark-Oppland, one local QA-coordinator admit that keeping enthusiastic and committed is a challenge. He notes:

> *"It is […] challenging to find time to perform internal controls. I struggle with that. I have done quite a few in the past but lately it has not been adequate, I simply have to admit that. We have to get that on the right track again. […] I find it difficult [to find motivation to perform the QA-coordinator role]. I feel that I need to do all sorts of other things as well, so it is kind of the time you have left to spare, when you have some time. It is perhaps me who is not setting aside enough time in my calendar. […] It is my decision really, it is about finding the time and discipline to do it.[…]*

Every time, there is focus on utilization rates. Even though I have another role as well, I still feel a little pressure to attain the same utilization rate as everybody else. There is sort of no room for saying that you are going to use those extra percents working on quality assurance. You are supposed to do a proper quality assurance work and be an inspirator and coordinator for the employees here and work actively on that. I do not feel that anyone has come to me and said "this is your role and you need to take it seriously""

Thus, like managers, QA-coordinators struggle to prioritize between their different responsibilities, and project work seems to draw the longest straw in many cases. This is supported by a divisional QA-coordinator in discussing the challenges associated with coordinating the local QA-coordinators:

"I am not able to get in contact with [local QA-coordinators] to a sufficient degree, because everyone are so busy in projects and set aside so little time. […] I think it is difficult to know what I can 'afford' to use, in a way, how much of their time I can occupy and how much each person is willing to let me occupy."

Clearly, QA-coordinators are having difficulty setting aside time in other geographical locations as well. One interesting point in that respect, is the amount of time that QA-coordinators are meant to spend on the quality work. Naturally, this percentage will differ, depending on the size of their unit and the amount of QA follow-up that is necessary. For example, some units choose to have every assignment mangager be subjected to internal controls, while others select a few. The idea is that the QA-coordinator and the unit manager, in the meeting previously mentioned, shall discuss the appropriate level of QA work for the upcoming year, and thereby map the required amount of time. By doing this, the QA-coordinator will be able to plan the year's QA activites, while knowing that the necessary use of resources (i.e. time) is rooted and 'accepted' in the unit management. If these meetings are not taking place, or if they do not result in a mutually agreed plan for the upcoming year , QA-coordinators will presumably find it difficult to know what is expected of them and what they are

supposed to do. Again, the cooperation between the QA-coordinator and the unit management is essential.

The quote from the divisional QA-coordinator above illustrates yet another aspect of the QA-coordinators' role that is of importance to the successful fulfillment of the QA responsibilities – the degree of support that these local QA-coordinators receive from the QA-forum. Seing that the QA-coordinators need to rely on expertise and personal persuasiveness, it is reasonable to argue that they need a certain degree of backing up from the QA-forum and from each other. Previously, all local QA-coordinators reported to the QA-leader, while they now report to they divisional QA-coordinators. This should imply that they will be followed-up more closely, because the division QA-coordinators are responsible for a smaller amount of people. However, this depends on the divisional QA-coordinators being able to wield this responsibility.

In the Hamar-office, the QA-coordinator reports to the B&C division QA-coordinator, a role that has been filled by at least two different individuals during the last year. The person currently filling that role has been reaching out to the local QA-coordinators quite actively. She reports seing the contact between the divisional and local QA-coordinators as essential:

> *"In means everything, really, because many of those who are in [the local QA-coordinator position] are younger and perhaps a little green… […] they are asked to fill that position, and naturally say yes, but do not get proper training, that is the feedback that we receive. It means everything to have someone to ask questions to and discuss things with. But how well it works varies. When I was a local QA-coordinator, I did not even know who the divisional QA-coordinator was. He did not send a single e-mail and did not make a single phone call. I never heard from him, I did not even know who he was."*

This is supported by the local QA-coordinator, who says:

> *"It is useful for me to have a dialogue with those who perform QA work for the division. It is kind of scattered, there should be a forum where we met*

[online] or something once a month to motivate and inspire. I think we need to meet more often. We have a gathering once a year or something but that is perhaps to rarely to get that drive."

In summary, the local QA-coordinators are given a quite essential task in relation to QA work, even if the responsibility for QMA follow up is placed with line management. Furthermore, they have to perform this task with quite limited funds in terms of power and authority. These QA-coordinators, therefore, need to be given the necessary support, both from the QA-function and from line management in performing their duties. Furthermore, the role of QA-coordinator should be given to someone who posess a personal commitment and enthusiasm for the QA work. The ideal relationship between QA-coordinators, the QA-function and line management can be depicted as in figure 16.

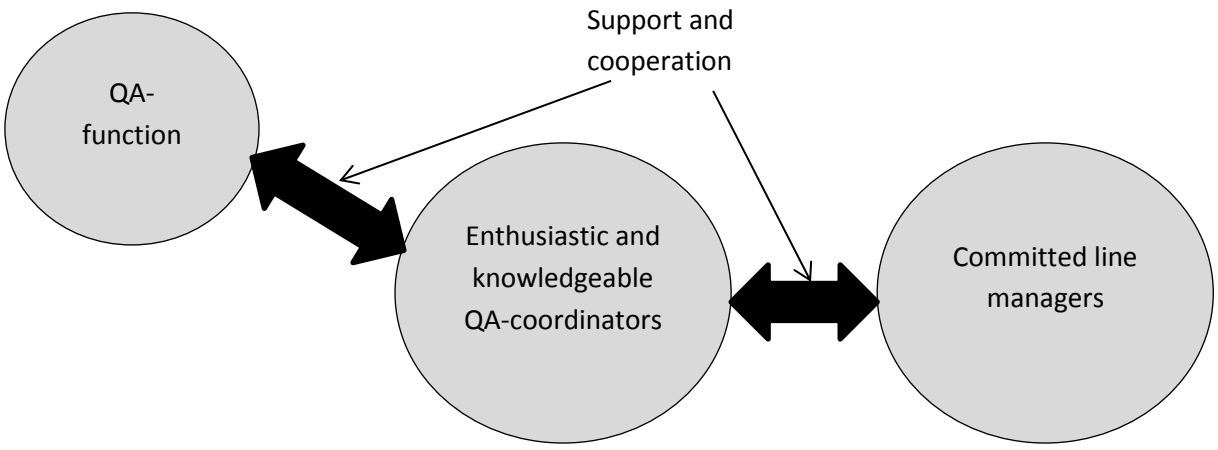


Figure 15 The necessary mechanisms surrounding the local QA-coordinators

As discussed above, there are signs of this configuration not being ideal in the region Hedmark-Oppland – there has been reduced management commitment, reduced QA-coordinator enthusiasm, reduced line management-QA-coordinator cooperation and reduced QA-function-QA-coordinator contact. Each issue viewed seperately, it is hard to argue that any of these issues are dire, after all, management does display a level of commitment and the QA-coordinator does express interest and knowledge in quality management. However, when regarded as a system, slight reducements in several components can cause bigger effects. Therefore, the distribution of responsibility and cooperation between the QA-function and line mangement is one aspect of organizational structure where challenges may arise. This means that although it can

still be argued that the organizational structure is largely congruent with the quality management system, there are aspects of organizational structure that must be managed carefully to increase the probability of QMS implementation success.

6.5.2 Alignment with strategy

It has not been within the scope of this study to perform an extensive analysis of Sweco Norway's strategy. However, there are a few strategic dimensions that deserve attention.

Vision, mission and strategic objectives

Sweco's vision is "*to become Europe's most respected knowledge company in the fields of consulting engineering, environmental technology and architecture"* (Sweco Group AB, 2013d). Recall that this study has found that the quality management system has been designed to fulfill the needs and expectations of both customers and other stakeholders by producing benefits such as increased technical quality, improved project management and development of competence. It is reasonable to argue that these benefits largely support the vision of becoming most respected.

Sweco's mission is *"to actively contribute to sustainable development of society"* (Sweco Group AB, 2013d). Sustainability includes environmental, economic and societal aspects, and by ensuring that the consultation that Sweco provides for clients' projects is of high quality, it can be argued that the QMS contributes to sustainable development. Furthermore, sweco@work contains mechanisms for environmental management and development that have not been treated in this study.

In terms of strategic objectives, it has already been shown that the QMS fits quite well into the strategic objectives of Sweco Norway (see section 6.3). In summary, therefore, it is reasonable to argue that the QMS supports the vision, mission and strategic objectives of Sweco Norway, and thus that Proposition 14 holds true.

However, over the last few years, Sweco has seen a rather rapid growth, both organically and by acquisitions, which has been, and still is, a strategic priority. Among the strategic objectives for Sweco Norway in 2013, an organic growth of 10 % is

stipulated (see appendix 3). Interestingly, there are no stipulated objectives for growth by acquisition in the present Action plan.

As in the corporation in general, the region Hedmark-Oppland has experienced both organic growth and growth by acquisitions in the recent years. Interestingly, several interview respondents noted that they had felt that the QMS implementation in their respective acquired companies had somehow 'slipped under the radar'. For example, consider the following interview excerpt from an interview with a representative of middle management:

> *Researcher: "When you were acquired and included in Sweco, how were you introduced to the quality management system?"*
>
> *Office manager: "Well, it took a long time before we were introduced to the system. We had an evaluation meeting in the aftermath of that acquisition, where we discussed several issues. One of the issues that came up were in regards to that information… or in regards to getting us incorporated into the system, that I thought that it was not done well. […] I mean, all in all, there were many positive things associated with that process, but getting incorporated into the system in particular, that was something that took too long."*

Similarly, consider the following excerpt from an interview with a group manager (who comes from a different acquired company):

> *Group manager: "[…] I feel that there is [some training] missing in between being hired and gaining insight into the system. I don't know, perhaps for us who came from a company and were quite numerous… perhaps if you are hired as a new employee, you will get a closer follow-up, I don't know. We did not, anyway."*
>
> *Researcher: "I've heard others talk about the challenges associated with acquisitions…"*
>
> *GM: "Yes, because you are set in you previous ways and perhaps there are so many [new people] that… I'm not convinced that Sweco was able to*

handle that, really. I think the process went well and I'm very happy to have started in Sweco, there is nothing wrong with Sweco, but after the assignment management course, I feel like "wow, why didn't I get this a year ago?""

R: "What signals did you receive from management when you started here in regards to quality management? Was it conveyed as a demand and expectation or…?"

GM: "Yes. We were told that there shall be self-inspection and peer review and that inspections were to be documented and that sort of thing, we were. But I do not feel that it was thorough. Take the Quality Control Plan for the assignment managers and those sheets; it simply took a while before we were informed about them."

Similarly, another group manager states:

"That was kind of a lack when we came into Sweco, that the pressure was not quite there. And when the pressure is not quite there, and you do not completely agree with the system, you end up not using it right. You really don't during a hectic day. You will take short cuts immediately."

Clearly, there are challenges associated with getting personnel from acquired companies adept and motivated to use sweco@work. Thus, although Proposition 14 cannot be rejected entirely, there are aspects of Sweco's growth strategy that causes QMS implementation challenges.

According to Haspeslagh & Jemison (1991, adapted in De Wit & Meyer, 2010), there are four types of acquisition integration approaches (see figure 17). In Sweco, acquired companies need to share resources, skills and benefits with the acquiring company, and there is therefore a high need for strtegic interdependence. There is no reason to upold organizational autonomy to a great degree, however, at least not in principle. Thus, the appropriate type of acquisition integration is absoprtion, in which the boundary between the two companies will eventually be dissolved.

		Need for Strategic Interdependence: Low	Need for Strategic Interdependence: High
Need for Organizational Autonomy	High	Preservation	Symbiosis
	Low	(Holding)	Absorption

Figure 16 Types of acquisition integration approaches (Haspeslagh & Jemison, 1991)

The challenge, then, is to absorb the acquired company efficiently and effectively into the acquirer in terms of both structure and culture, of which culture is perhaps associated with the most difficulty.

According to Nahavandi & Malekzadeh (1988, p. 87), there are four types of acculturation (cultural change) modes in acquisitions: integration, assimilation, separation and deculturation. Furthermore, they argue that "*when the acquirer is unicultural and the merger is with a related company, assimilation is the most likely mode of acculturation"* (Nahavandi & Malekzadeh, 1988, p. 87). Assimilation, in which one group adopts the identity and culture of another, corresponds well with the notion of absorption. Sweco can indeed be argued to be unicultural (although others would perhaps argue otherwise) and acquires related companies, and will therefore prefer assimilation. However, "*when members of the acquired organization value their culture and organizational practices and want to preserve them, and they perceive the acquirer as attractive, integration will be their preferred mode of acculturation"* (Nahavandi & Malekzadeh, 1988, p. 87). Whereas assimilation leads to complete absorption of the acquired company, integration would lead to structural assimilation but little cultural and behavioral assimilation (Nahavandi & Malekzadeh, 1988, p. 82). It is reasonable to assume that members of companies acquired by Sweco do perceive Sweco as attractive but that they also want to preserve their culture and 'the way we do things around here' , at least to a certain degree. Nahavandi & Malekzadeh go on to argue that when there is incongruence between the two companies' preferred mode of acculturation, there will be acculturative stress. The challenge, then, is to minimize this effect.

Further attempts to solve the conundrum of successful post-acquisition integration will not be made here. However, it will be noted that in terms of assimilation into the QMS, it can be argued that Sweco needs to carefully promote the system in a way that causes members of the acquired companies to become willing to forgo their previous systems. This can only be done by convincing them that Sweco's QMS is attractive, and by placing demands for system use on them. In other words, it is necessary to ensure that members of acquired companies become both adept at and motivated to use the system.

6.5.3 Alignment with organizational culture

As with strategy, it is not within the scope of this study to perform an extensive analysis of Sweco Norway's corporate culture. Consider the dimensions of organizational culture given in figure 18.

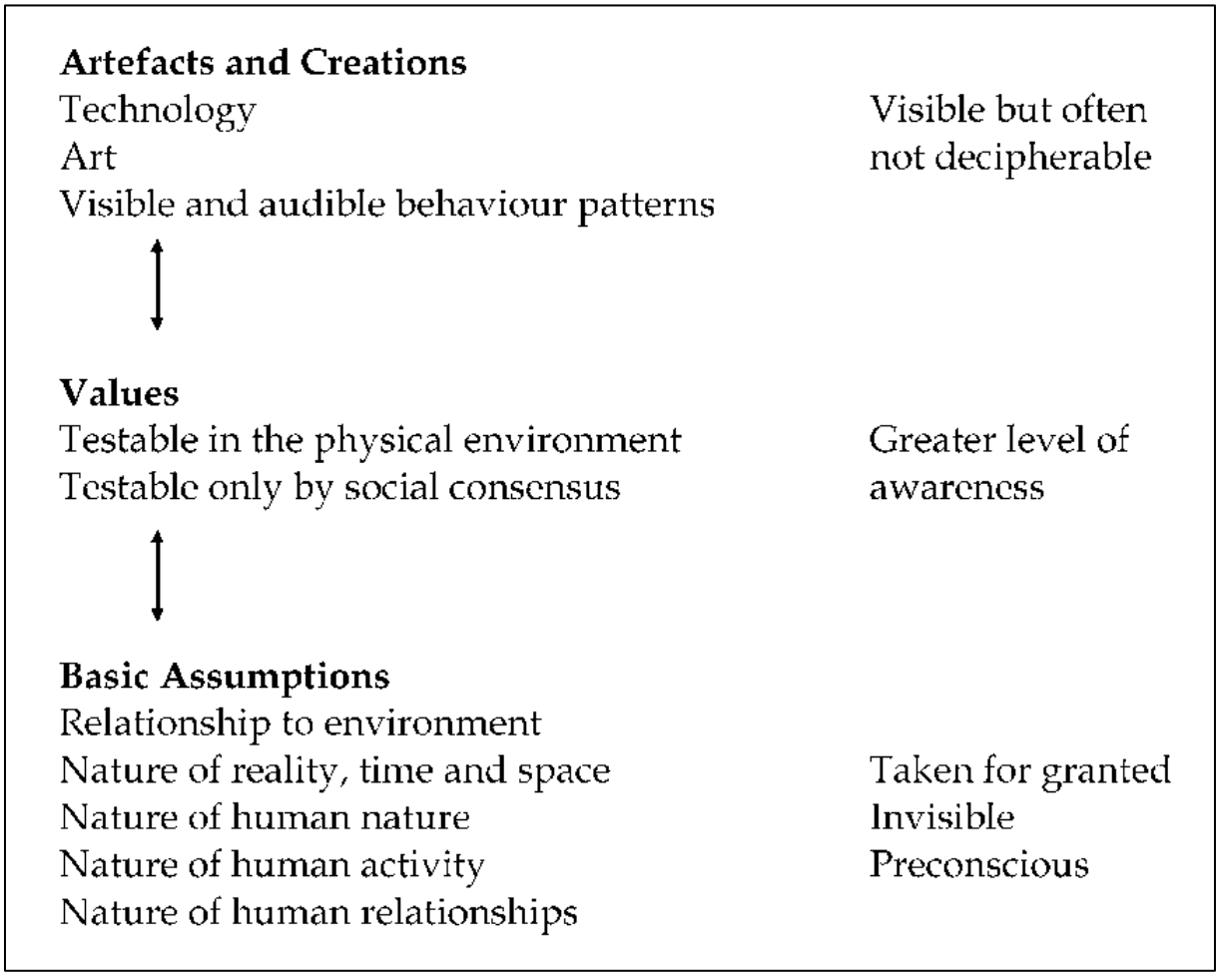


Figure 17 Levels of culture and their interaction (Schein, 1992, adapted in Kekäle, Fecikova, & Kitaigorodkaia, 2004)

Among these dimensions, the only one that has been somewhat detectable during the present case study is 'values'. However, these values have only been detectible in the sense that Sweco's declared values have been identified. These are Team player, Engaged, Fresh thinking and Responsible (Sweco Norge AS, 2013). In addition, it can be argued that there is an underlying value of profitability and growth in Sweco, even if this is not explicitly stated on the company's home page.

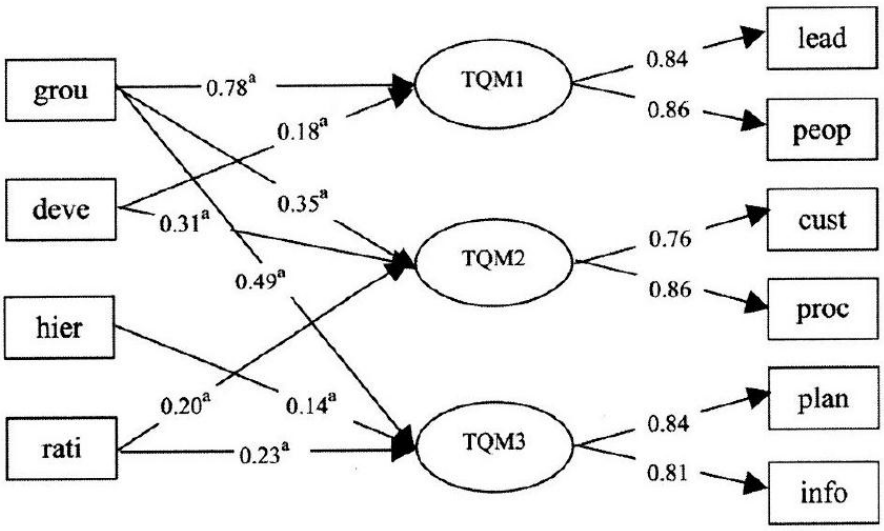
In investigating the relationship between organizational culture and total quality management practices or principles, Prajogo & McDermott (2005) found that certain configurations of TQM practices correlated with certain types of organizational cultures.

To determine organizational culture, Prajogo and McDermott used the framework depicted in figure 19. The underscored values are those corresponding best with Sweco's values (including those underpinning the business model and strategic objectives of growth and flexibility).

Figure 18 The competing values framework of organizational culture (Denison & Spreitzer, 1991, adapted in Prajogo & McDermott, 2005, p. 1105)

Clearly, Sweco's values correspond quite well with several configurations of organizational culture: group culture, developmental culture and rational culture. There is perhaps more congruency with the more flexible cultures (group and developmental), however, especially if the value of 'profitabilty' is removed from the mix.

Prajogo & McDermott (2005) go on to investigate how these cultures correlate with three different configurations of TQM principles (see figure 20). The configurations are TQM1, which comprises Leadership and People management practices, TQM2, which comprises Customer focus and Process management, and TQM3, which comprises Strategic Planning and Information and analysis.



[a] significant at p< 0.01

Figure 19 The pluralist model of the relationship between organizational culture and TQM practices (Prajogo & McDermott, 2005, p. 1115)

Pinpointing the TQM practices that apply to Sweco is not straightforward. However, it can be argued that the two practices mostly embedded into the QMS design are Customer focus and Process management, that is, TQM2. Both group and developmental culture (as well as the rational culture) correlate with this TQM configuration, which according to Prajogo & McDermott is associated with quality assurance in terms of improved conformity and reduction of deficiencies. This is interesting when viewed in conjunction with the fact that many respondents

emphasized deficiency reduction as a central expected benefit from the QMS. The third most applicable TQM practice in Sweco is perhaps people management, in the sense that the QMS is seen as an aid in competence development. Again, there is correlation between the associated TQM configuration, TQM1, and group and developmental culture.

All in all, there are signs of Sweco Norway's organizational culture being correlated with all three TQM configurations, suggesting that the culture is supportive of the implementation of quality management systems and that Proposition 15 holds true.

6.6 Implementation strategy

6.6.1 Ability factors

Recall the following propositions:

Proposition 16: In Sweco, there is an emphasis on providing training in QMS use and understanding for employees.

Proposition 17: However, reasons for non-compliance associated with ability are frequently stated, such as:

- *Lack of appropriate training*
- *The system is difficult to use*

There are several arenas for QA-system training in Sweco. First, there are the Assignment Management Courses (AMC's), which are held approximately four to six times a year. The QA-system is a central part of this course, which comprise of a set of e-learning modules and a two-day gathering. In addition, a more introductory course to assignment management has recently been introduced, called Assignment Basic.

Second, internal audits are intended to be a central learning opportunity for both assignment managers, line managers and other personnel. Typically, the auditor will visit an office or department for a whole day (or two) and will, in addition to auditing several assignments, audit the managerial procedures pertaining to quality management in the unit. In addition, the auditor will usually conduct a department (or

office) meeting where she will give information about different issues regarding the QA- system.

Local QA-coordinators are also seen as a source of information dissemination and learning in the departments and offices. These individuals are supposed to have up-to-date knowledge of the system, which they are to pass on to others in their unit. They are also meant to give presentations in office or department meetings regularly, ensuring that important quality management issues are discussed.

Based on the above, it is reasonable to argue that Proposition 16 can be accepted. However, there are signs suggesting that the provided training is not sufficient. Moreover, there are signs that these training efforts are not always performed as intended.

Interview respondents who have attended the Assignment Management Courses generally report feeling that they have a new understanding of the system and how it can and should be used. Meanwhile, a few respondent reported having felt such confidence in the system during the initial period after attending the course but that he had then gradually become less concerned with adhering to the system over time, or that they had forgotten much of what they had learned. Regardless, it is reasonable to argue that the Assignment Management Courses are a quite effective promoter for system use.

However, several respondents have brought up issues regarding the amount and type of personnel that attend the course. First, given the fact that Sweco has a vast amount of assignment managers, the AMC's are not able to reach them all. This is acknowledged by the QA-leader, who states that

> *"There is a turnover in the company. It is not large, but it's there. There are continuously new employees, there are several hundred new employees every year. We educate 150-160 individuals in the AMC's, stuff their heads with how good this is and how it works and how it's used. But there are a great number of people we do not reach."*

Furthermore, several respondents have commented that the information given in the AMC's should also be given to both line management and assignment personnel to a greater degree. The rationale they give for this is that it would increase the expectations for system use throughout the organization. In the words of a divisional QA-coordinator:

> *"I wish that […] they would say in the introductory courses that "when you come into a project, you shall expect that the project planning has been performed, or that it will be performed at an early stage of the project, and you shall expect that it is updated throughout the project. […] And you shall communicate that expectation to your assignment manager". I think that when an assignment manager hears from his manager that "you shall do this" and when those who come in demand it, he will do it."*

Clearly, the Assignment Management Courses are a good and appropriate measure, but they are unable to completely cover the need for training in the organization.

Several interview respondents, specifically those representing top management or the QA-function, emphasis the learning potential of the internal audits. Obviously, there is a learning potential for the assignment managers who are audited, but the idea is that both management and other employees will benefit from audits, through the administrative audit and the common information and training sessions, respectively. However, although those respondents who had experienced an audit reported feeling that is was a positive and interesting experience, respondents from the region Hedmark-Oppland did not really see the audits as the learning occasion that they are perhaps meant to be. Consider the following excerpt from an interview with a middle manager:

> *Researcher: "The internal audits, do you perceive them more as a control or a learning arena?"*
>
> *Manager: "I think people perceive them more as a control. […]"*

R: "I know that several have said that they are meant to be one of the most important learning arenas [for the QMS]. It is interesting, then, if they are still perceived more as a control."

M: "Well, I think that the most important learning arena is when we have one of those little refresher courses, because more people attend them. In an audit there are perhaps two individuals being audited. […] That's why I'll say it is perceived more as a control… […] It really can't become anything else, it can't become a great learning arena, in my opinion."

R: "But did the [auditor] hold a common meeting or office meeting [the last time he was here]?"

M: "No."

This manager makes a valid point that the learning potential of the internal audits is reduced when only a few individuals are aware of there even being performed an audit. If the internal audits are meant to be a learning arena then, their purpose of disseminating information and motivation should perhaps be even further emphasized.

Finally, as previously mentioned, the local QA-coordinators are meant to plan and conduct information and training sessions during office meetings or department meetings in their unit. In Hedmark-Oppland, a training seminar was held during the summer of 2012 but the QMS has not been an issue on such meetings since.

In summary, it can be concluded that there does exist appropriate and good training mechanisms in Sweco, but that these do not necessarily reach enough people. Moreover, having them does not necessarily imply that they are performed as intended. Even though Proposition 16 still cannot be rejected, there is a potential for increased training initiative, perhaps especially on the local level (meaning internal audits and local training sessions).

During interviews, several respondents report experiencing barriers to system use associated with ability, as is demonstrated by the following quotes:

"I feel that I could have had more [knowledge about the system and how it can be used]"

"[Not knowing the system well enough has been a barrier] up until I attended the Assignment Management Course. […] It is kind of ok if you get it demonstrated […] but if you sit down on your own and start looking, you can really look for a long time without finding what you are looking for. And you do not necessarily know what you are looking for either, unless you have been told that it's there."

"There is a high user threshold for the system. Plus, sweco@work has been a little comprehensive and disorganized. And it being disorganized makes the threshold higher, that you don't find what you are looking for etc., that you have to spend time looking for the things you need."

Thus, there are clearly those who feel ability barriers to system use. Thus, among the listed barriers associated with ability in Proposition 16, it has been verified that several employees feel that they lack sufficient training in system use. In terms of the perception of the system as difficult to use, it was shown in section 6.2 that this 'excuse' was discarded by the QA-function and top management on the basis of 'they haven't tried'. There have been no respondents claiming that the system is difficult to use, per se, in this study. Rather, several respondents have argued that the system is perceived as complicated, meaning that it has a large content and that it appears somewhat disorganized. Again, it can be argued that those who claim so have not used the system enough and therefore do not know it well. However, it is worth noting that the author of this case study had to spend quite a lot of time in order to learn to efficiently navigate the system during the summer internship in 2012. Although it can be argued that the system appears quite logic once it is well known, it can be also argued that the threshold for use would be lower had the user interface been even more intuitive and simple.

Presumably, navigating parts of the system will become easier with the introduction of the new trade-specific platforms.

6.6.2 Motivation factors

Recall the following propositions:

Proposition 18: There are generally good conditions for employee motivation in Sweco.

Proposition 19: In terms of QMS implementation in Sweco, however, reasons for non-compliance associated with motivation are frequently stated, such as:

- *Lack of understanding of meaning and importance*
- *Lack of incentives for use*
- *There is resistance to change*
- *The system is seen as bureaucratic, complicated and troublesome*
- *The system is seen as unnecessary*

In Sweco's employee survey, Sweco Barometer, for 2012, the following scores can be found for the employees of the B&C unit of the Hedmark-Oppland region in regards to motivation (Sweco Norge AS, 2012a): 80 percent of employees report feeling both high work engagement and high work satisfaction. Compared to the benchmark average of 69 %, this is quite good. Among the remaining 20 %, 16 % report feeling high work engagement but low work satisfaction. Thus, it can be argued that the general level of work motivation in the region is high, suggesting that Proposition 18 can be accepted. This should imply that employees are willing to display discretionary behavior to the employers benefit. Moreover, it can be argued that if the QMS is seen as an important element in achieving the organization's objectives, employees should be motivated to use the system to achieve the expected and desired benefits.

However, there are signs that employees do not feel highly motivated to use the system. For example, it was argued in chapter 5 that the system is not used systematically, consistently or extensively. Moreover, we saw in section 6.3 that several employees felt that the system was something 'extra' to their work tasks – that it did not add real value to the assignment process. Furthermore, we saw in section 6.2 that several respondents argued that the system appears detached from the reality of the challenges that assignment managers face.

Indeed, several interview respondents report barriers to system use associated with motivation. Consider for example the following quotes:

"My motivation to use it is perhaps not that high. […] I see the point, but… well, I simply don't use it extensively."

"If I had perceived it as useful in my daily praxis, I would have used it."

"I both [see it as important to use] and I don't at the same time. I still feel that it drowns in too much nonsense"

"The most important reason [for not using the system] is that we are very focused on delivering to the client, because the mechanisms in the QMS are not really visible to the client before something has gone wrong. So we focus more on producing what we need to deliver and that is priority number one when there's little time. And that's quite often."

"I think it has got to do with habits and culture and motivation."

"We have to ask ourselves "why are they not trying? Why are they not taking the time to use it?" […] I don't know why. It has got to have something to do with attitudes."

There are no respondents reporting not seeing the importance and meaning of quality assurance or good project management practices, quite on the contrary. However, there are no respondents on the lower hierarchical levels reporting that they feel that the system is a vital element in achieving good quality or good profitability either. Rather, several respondents seem to pick and choose elements from the system that they feel fit into their own quality assurance scheme, while conveying that the system as a whole is perceived as bureaucratic. Among the reasons listed in proposition 19, therefore, the following can be said to hold true to a certain degree: the system is seen as bureaucratic, complicated and troublesome; and *parts* of the system is seen as unnecessary. There does, however, seem to be an understanding that the system has meaning and importance in terms of its intentions – everyone thinks that the organization needs a system of some sort to ensure a certain level of quality. Again, the question is whether or not the system is an appropriate and good tool for achieving quality, profitability and other objectives. According to several respondents, it is not. Therefore, they are not motivated to use it extensively either.

It was argued in section 4.2.6 that motivation can be increased by offering rewards in terms of motivation needs such as recognition, esteem and responsibility. Generally, respondents from lower hierarchical levels report that they do not feel that such rewards are given to those who are adept at using the system. This corresponds well with findings in section 6.4.2; if managers do not see system use as essential, they are not going to be concerned with praising those who use it. Furthermore, it has been shown that by some, the system is not perceived as value adding to their projects. Therefore, the following aspect of Proposition 19 can be accepted: employees may feel that they lack incentives for use.

One final aspect of motivation, resistance to change, has been noted by several respondents, especially in relation to acquisitions (as discussed in section 6.5.2) and older employees. According to Jacobsen (2012, p. 133), resistance to change is frequently caused by one of several of the following; academic disagreement; fear of the unknown; loss of personal benefits; loss of identity; extra workload; social relations; breach of psychological contract; changed power structures; symbolic order; and actors in the environment.

For members of acquired companies, the most central causes of resistance to change are perhaps academic disagreement, fear of the unknown and extra workload – they do not know the system, they feel like getting to know it is a massive task and, perhaps most importantly, they are not convinced that they think it is better or more effective than what they are used to. For older employees, the same mechanisms can come into play. In addition, however, these employees may feel that they may lose personal benefits or power because others may enter their 'turf'. In the words of a divisional QA-coordinator:

> *"If you adhere to the system, it is easy for the next person to get started, understand what has been done and continue. It is quite efficient and easy. If you use the system you'll make yourself less important, which some may think is not so cool, but for the company, it's very cool."*

According to Jacobsen (2012, p. 185), resistance to change can be minimized if those subject to change are convinced that the change is *important, appropriate* and *for the*

better. That is, those affected by the change must realize and internalize that the change is necessary, or that there is a problem that needs to be solved, that the change is a viable solution to that problem, and that that solution will bring about an improvement relative to the status quo. Thus, management and co-workers need to help these individuals to understand both the rationale for using the system and to gain the ability to use it.

6.6.3 Opportunity factors

Recall the following propositions:

Proposition 20: There are signs of employee involvement in Sweco's QMS development and implementation.

Proposition 21: However, reasons for non-compliance associated with other aspects opportunity is frequently stated, such as:

- *Lack of time to learn the system*
- *Ambiguous demands from managers*
- *Feeling pressure to skip the system*
- *The system does not have appropriate tools for everyday operations*

The sweco@work platform and most of the routines are developed centrally in Sweden. The tools and manuals, plus a few additional routines, however, are specific to Sweco Norway. According to the president of Sweco Norway, the manuals (previously the routines of Grøner's QMS) were subject to extensive employee involvement:

> *"When we became certified and when we started seriously using it, we went through every routine, routine by routine, and discussed them thoroughly, whether they described how we worked and whether there were suggestions for changes where they didn't and so on."*

Today, the feedback is mainly meant to be handled by the 'suggestions and improvements' feature in sweco@work, where employees can register their feedback. The QA-leader notes the following in regards to the feedback to the system:

> *"We get feedback from all our colleagues in Norway, and I pass those on… I mean, I can do minor changes that are supplementary to the system… manuals and those sort of things we can develop ourselves in Norway, as long as it does not turn out worse than the template or the norm. If there are bigger issues we bring it to an international level, and then there is made a priority list, year by year, for the things that we want to prioritize and have money to do something with. There is feedback coming in on a daily basis. Some are sensible and others are not. […] I would say that for the Norwegian part, I think we change something every single week, if not every day. Several times a week I'll go in and… even though they are small changes that you perhaps wouldn't notice, it is a clarification that hopefully is for the better, based on contributions from colleagues."*

Clearly, there is an element of employee involvement in the QMS development and refinement, which suggests that Proposition 20 holds true. Specifically, several respondents report feeling that feedback from employees has led to the reorganizing of the trade-specific contents which is currently being undertaken. Furthermore, several respondents state that they feel that this is a much needed change that they hope will give a substantial boost to the maintenance and updating of tools, which again will lead to a greater confidence in the contents of sweco@work. With the reorganization into trade-specific platforms (such as for example by wood or concrete structures) instead of by division-specific contents, one hopes to avoid the rather random submitting of content into sweco@work, which has previously been an issue. Now, each platform will have a designated manager who will be in charge of keeping contents correct and up-to-date.

In fact, there are signs of there being, or having been, a lack of trust in the contents of sweco@work. For example, several respondents report having found templates with other companies' logos on them. In Sweco Barometer (Sweco Norge AS, 2012a), only 56 % agree (4 or 5 on a five-point Likert scale) with the statement "*In our unit we maintain our competitiveness by simple or effective work processes (such as sweco@work or other local processes)"*, which may also suggest that employees are not completely confident in these processes. This suggests that the proposition 'the

system does not have appropriate tools for everyday operations' is a quite accurate description of some employees' perception of the system.

In section 6.2, we saw that several representatives of the QA-function and top management argued that those who felt that the system was difficult to use had not used it enough. Indeed, several respondents from lower hierarchical levels report feeling that a barrier to system use is taking the time to get to know it. Furthermore, they report feeling that they find it difficult to set aside time to adhere to the system. For example, one assignment manager notes that:

> *"[Using the system] is simply of low priority. I don't have the time. When the schedule does not allow it, it is not prioritized."*

The question, then, is why it is not prioritized. Possible answers to that question is indicated several places in this report. For example, it has been discussed that some do not find using it useful or value adding. Moreover, it is plausible that assignment managers find it hard to prioritize the system when it is not demanded of them from their superior. There are a few respondents reporting that they feel some pressure from their manager to prioritize delivering to the customer or making profits over using the system. Moreover, there is a quite high emphasis on profitability in the organization. In Sweco Barometer, 93 % agree (4 or 5 on a five-point Likert scale) to the statement *"There is a focus on profitability in the work I participate in"* (Sweco Norge AS, 2012a). This is also acknowledged by several managers. For example, the B&C division manager notes that:

> *"It might have something to do with the industry not having been able to get paid for doing the necessary assurance. I think perhaps that is the main challenge. I mean, which finger are you going to bite, are you going to lose money in the project or are you going to do what the system requires. And then perhaps you take it lightly because… perhaps there is a greater focus on profitability than necessary quality assurance."*

All in all, it is reasonable to argue that Proposition 21 holds true; some employees are finding it hard to take the time to learn and to use the system, which is perhaps

reinforced by a focus on profitability and a relative lack of expectations of system use from managers.

6.6.4 System performance measurement

Recall the following proposition:

Proposition 22: In Sweco, quality management system measurement places more emphasis on measurement of compliance than with measurement of system and process results.

In Sweco Norway, the most important means of measurement in terms of quality management system implementation and performance is the internal audits. In auditing assignments, it is assessed whether or not the documentation requirements of the system (given by the Quality Control Plan) are fulfilled. Arguably, these audits are mainly focused on measuring system compliance. In auditing of administrational routines in the units, a number of issues are audited, such as local structure, objectives, customer complaints, meeting structure, competence development, internal audits and controls, deviations handling, and marketing. Here, there is more of an angling towards system results, but it can be argued that the main emphasis is still on system compliance. Typically, there has been planned one internal audit per office in Hedmark-Oppland per year. In general, these have been conducted as planned.

Internal controls can follow the same blueprint as the internal audits of assignments, or can be targeted specifically at parts of the system, such as for example the initiation phase or documentation of technical controls. Thus, these are equally focused on system compliance rather than system results.

All in all, it seems reasonable to argue that Proposition 22 holds true – that there is an emphasis on measuring system compliance rather than the outcomes of the system. However, there are a few aspects that modify this presumption. First, one of the requirements of the QMS for the Close-phase is that customer satisfaction should be assessed where appropriate. It is not known whether this is actually done in most projects. However, in the Sweco Barometer, 75 % of respondents agree to the following statement: *"I am aware of how satisfied our external clients are",* which

suggests that such assessments take place. On the other hand, only 53 % agree to the statement *"In my unit/team, we use feedback from external clients in our improvement efforts",* which may suggest either that such feedback is not sought that often after all, or that such feedback is not always utilized to make improvements. Either way, the customer satisfaction requirement can be used as a measurement of QMS output. Furthermore, the assignments' economic results are also monitored and measured, although it is not known on which level of detail. Moreover, this is done in Sweco's financial system, PX-web, rather than in the QMS. Interestingly, one of the documentation requirements of the QMS is 'Results Management', which is meant as a quarterly assessment of assignment success in terms of financial results, quality management and resource management that is supposed to be performed by the assignment manager and the a designated coach for the assignment manager(typically the assignment manager's superior). Such results management serves as a governing mechanism for the project, while giving the assignment manager the opportunity for coaching from an experienced colleague. There are no signs of results management being performed in that prescribed, systematic manner in Hedmark-Oppland.

All in all, there are mechanisms in place that could enable measurement of system results, such as customer satisfaction surveys and results management. However, these seem to take a back seat to compliance measurement. It is possible that such an approach to system performance measurement increases to the before mentioned notion of 'the system for the sake of the system' and the view of the system as irrelevant to achieving project success.

Ideally, in addition to the measures assessing system compliance, there would be more effective measures assessing both whether the system produced the intended benefits, and whether these benefits were appropriate according to the business objectives of the organization.

7 Verification of the gap's existence and discussion of results

Recall that the problem statement of this case study was to investigate whether there was a discrepancy between the intended and actual use of the system, as well as an assessment of possible reasons for such a gap - the ultimate goal of that assessment being to suggest a set of principles for minimizing the discrepancy.

Through this study, it has been shown that it is reasonable to argue that the use of sweco@work and the adherence to its documentation requirements is not extensive or complete in the region of Hedmark-Oppland. Furthermore, it has been argued that the quality management system has been implemented in order to achieve internally oriented benefits such as performance improvements and that there is a mandatory aspect of the system – it is meant to be used in every project. Hence, it is reasonable to argue that it must be accepted that there is indeed a gap between how the system is intended to be used and how it is actually used. Thus, we have verified Proposition 23 – which stated that such a gap existed.

The question, then, is why there is such a gap. Obviously, the answer to that question is extremely complex, because while it does have something to do with formal dimensions such as organizational structure, training and system design, the most prominent dimension affecting system use is probably the human factor. This 'factor' (which in reality consists of a complex web of interrelated aspects of the human being) has been subject to countless attempts at demystification by disciplines such as psychology, sociology, organizational research and the research of management and leadership. In all probability, it will never be fully understood. However, we cannot refrain from trying to understand how we can facilitate performance in individuals.

In this study, a number of factors have been revealed that may either contribute to or hinder the successful implementation of the QMS. These are summarized in the table below.

Factors that may contribute to successful QMS implementation	Factors that may hinder successful QMS implementation
Internal motivation for implementation	External motivation for implementation or perception of such ('clients require certification'-rhetoric)

Internally oriented expected benefits, such as Technical quality Better project management Development of competence Customer satisfaction	Perception of system as unable to produce internal benefits, specifically better project management Lack of project management skills in assignment managers
More-than-minimum approach to system design, based on the organization's inherent objectives and processes	Perception of system as extra to the organization's business and unable to add value
System designed to support achievement of several business objectives (and thereby satisfying several stakeholders)	System perceived as mostly directed at achieving technical quality (and thereby satisfying only some aspects of clients' needs)
System designed to support quality management through all phases of the project	Perception of quality control as more relevant than quality management
System perceived as accurately describing how the organizations performs work	System perceived as detached from reality
Display of management commitment to quality	Display of moderate management commitment to QMS use
	Middle managers finding it difficult to demand system use when they do not perceive the system as good enough
Perceived increased emphasis on quality management from top management	Perceived lack of demands and expectations for system use from management
Expression of faith in the system from top management	Expression of lack of faith in the system from middle and lower management
System designed to function as an integrating mechanism between business units	Perception of system as insufficient integrating mechanism
Alignment of system with organizational structure	Challenges associated with the QA-coordinator role (due to lack of enthusiasm or lack of support from line management or the QA-function)

Alignment with vision, mission and strategic objectives Alignment with organizational culture Training arenas and mechanisms in place Generally good conditions for motivation Signs of employee involvement and engagement in system development Expression of increasing faith in the system with introduction of profession-specific platforms	Challenges associated with growth strategy (acquisitions) Training mechanisms not functioning as intended (perception of lack of training and disorganized system) Lack of motivation for system use (due to lack of incentives for use, perception of system as non-value adding, perception of system as bureaucratic and resistance to change) Perception of system as outdated and irrelevant (lack of trust in the system) Perception of lack of time to learn and to prioritize system use Perception of pressure to skip system use Measures emphasized on system compliance rather than system results

Table 5 Factors that may contribute to or hinder system implementation

From the column on the left, it is clear that there are several mechanisms, structures and factors in Sweco that contribute to the likelihood of successful QMS implementation - especially the internally oriented nature of desired and expected benefits, the perception of increased focus on quality management from top management and the hopes expressed for results from the reorganization of the discipline-specific contents.

On the other hand, the column on the right shows that there are also a number of mechanisms, structures and factors that may hinder or weaken the implementation. For the sake of this analysis, these can be grouped into three categories (although it can be argued that they are all interconnected in some way): issues regarding the

perception of system purpose, issues regarding system design and mechanisms that may hinder use.

Issues regarding perceptions of system purpose

In this study, three groups of expected benefits from system use have been identified: improved or 'right' technical quality in products and services (as well as in administrative routines), improved project management practices (and thereby increased project success in terms of success criteria such as time and cost) and development and consolidation of competence (both in terms of professional disciplines and in project management). Together, these benefits contribute to fulfillment of stakeholder needs, such as satisfaction with products and services for clients, revenues and profits for shareholders and stability and professional development for employees.

However, employees do not necessarily see the purpose of the system as being the achievement of all of these benefits. Instead, some tend to reduce its scope to that of ensuring a certain level of technical quality. Furthermore, some tend to see is mostly as a repository for quality inspection check lists, rather than as a means that can be used to plan and design quality into a product from day one – they see it as a means of quality control rather than a means of quality management.

Such a view can be interpreted as indicative as one of the two following alternatives (or a combination of them): First, it may be that the organization has not been able to successfully communicate the complete set of purposes underlying the system. In other words, that some employees have not understood the importance or relevance of using the system as a means of achieving improved project management or improved collective competence development.

Second, it is possible that the system design does not efficiently facilitate the achievement of all of the intended purposes – that it is more directed at encouraging quality control rather than quality management and that it does not effectively improve project management practices or knowledge management in the organization. In that case, it is not that the employees have not fully grasped the

potential of the system; it is rather that the potential of the system was not that great to begin with. This alternative is further discussed in the next section.

Regardless of which alternative is closest to reality, it worth noting (and make attempts to change) the fact that the system is not seen by some employees as a means of yielding all of the benefits that it is meant to yield. For if employees merely see it as a means of assessing the technical quality they will not use it to improve their project management practices or to leverage and develop the competence that exists in the system, and will thus not achieve the associated benefits.

While some employees reduce the scope of the system, there are a few who even dismiss its internal purpose altogether because they feel that the system is there for the system's sake and to maintain an externally motivated certification. Clearly, this will have a detrimental effect on system use. Furthermore, this may be confounded by a relative emphasis on measurement of system compliance, rather than system results, in the organization, as well as by an 'our clients require the certification, so we need to do this'-rhetoric.

Issues regarding perceptions of system design

Throughout this report, a recurrent issue has been that several individuals in the organization shares a perception that the system is not optimal, great or even appropriate. One aspect of this is that it is seen by some as something that requires extra work, and that this extra work effort is not outweighed by the benefits obtained. Thus, some individuals assess the 'cost'/benefit of system use, arrive at a negative answer, and thus choose not to prioritize using the system.

Another aspect is the perceptions that some employees hold in regards to whether the system is able to produce the expected and desired benefits above. In terms of technical quality (and especially the *control* of such quality), there has been a lack of trust in the system because the system contents have been seen as outdated and not adapted to aspects of quality such as compliance with statutory requirements. This issue is currently been tackled by the introduction of the discipline-specific platforms, and employees express hope that this will improve the situation.

In terms of improving project management practices, there have been several respondents in this study that have held that the system is not appropriate for achieving these kinds of benefits effectively. Moreover, it has been questioned whether the system is a sufficient integrating mechanism between business units – that is, whether it effectively ensures that competence is raised across geographical locations (again, one expresses hope that this may improve upon the introduction of the discipline-specific platforms).

Clearly, a perception of the system as not optimal (or not even good) will have a detrimental effect on system use. In this study, such perceptions have largely been countered by top management and the QA-function by the 'they have not tried'-argument. It is likely that this argument is true for many employees, especially in regards to the cost/benefit aspect – if they learn the system well, the cost is likely to go down and the benefit is likely to go up. Furthermore, there will always be a potential for further improvement of the efficacy of a system (such as for example by increased automation), and whether this potential should be realized or not will have to be a judgment call made by those who control the resources necessary for system improvements. However, in terms of the perception of the system as not appropriate for achieving the expected benefits, the causes of this perception should be examined further and with an open mind. If the system is in fact not capable of producing the expected benefits, it is important that this is uncovered and managed accordingly. If such an assessment results in the system still being deemed capable of producing those benefits, on the other hand, it should be uncovered why some employees feel that it is not.

Mechanisms that may hinder use

The last, and perhaps most prominent, category of challenges to system implementation are the mechanisms that may hinder system use for some employees. In this section, these will be discussed with reference to the aforementioned factors of individual performance; ability, motivation and opportunity.

First, this study has revealed that there are signs indicating that some employees are not, or feel that they are not, sufficiently adept at using the system - they are lacking

the ability to use it. This is expressed both in terms of not knowing the system itself well enough, and in terms of there being a relative lack of assignment management skill among many of those who are meant to have it. Clearly, there is an inexhaustible need for development of assignment management skills and system knowledge in the organization. However, although there are several mechanisms in place that are meant to do this, these mechanisms are not necessarily utilized to the fullest. Specifically, it has been shown that the role of internal audits and the training and information dissemination activities performed by local QA-coordinators can be further strengthened. Furthermore, it has been shown that special efforts should be made in order to effectively incorporate members of acquired companies into the system (which needs to be done by managing both ability and motivation for system use).

Second, this study has shown that several employees feel a moderate or low amount of demand or expectation of system use from their managers. This effect is probably compounded by the fact that several managers report feeling that the system is not good enough, and that they therefore find it difficult to promote it with conviction. It can easily be argued that such a lack of pressure from superiors has a detrimental effect on employees' motivation to use the system. Furthermore, a few employees even report feeling some pressure to skip using the quality system extensively because matters such as profitability and utilization rates are seen as more important – they feel that they do not really have the opportunity to adhere to the system. On the one hand, it can be argued that profitability is a primordial goal of the organization, because without revenues and profits, there will be no organization, and thereby no work place. However, it can also be argued that in the long run, an emphasis on quality management is a prerequisite for profitability. Therefore, a shortsighted focus on profitability at the expense of quality should be avoided.

Another opportunity-related factor often mentioned is the lack of time to learn the system, and the lack of time to adhere to the system (which is related to both the pressure for profitability above, as well as to the fact that using the system takes time when you are not used to it). Again, it is management who must ensure conditions that facilitate the use of time to both learn and to use the system. All in all, management set the tone for whether or not quality management is important, and thereby either

provides or not the motivation and opportunity to use the system. The role of management in promoting (or hindering) system use, therefore, cannot be stressed enough.

Finally, the third mechanism that may have hindered the implementation of the QMS in the region is the challenges associated with the local QA-coordinator role. As revealed in this study, this is a role that can be quite simple if line management is committed and proactive in promoting system use, but that becomes complicated if they are not to a sufficient degree. In that case, the QA-coordinator more or less becomes a sole ambassador for the QA-system, who needs to rely on diplomatic ability and personal persuasiveness to promote system use. Achieving improvements in system use under such conditions is challenging, at best. Therefore, it is vital that the cooperation between the QA-coordinators and line management functions well, that the QA-coordinators have the necessary enthusiasm and expertise to fulfill their role, and that they receive the appropriate support from the rest of the QA-function.

8 Principles for minimization of gap

Recall the following proposition

Proposition 24: The region of Hedmark-Oppland can use elements from Kotter's eight-step process of creating change to improve the implementation of the QMS.

Based on the findings of this study in regards to the reasons for there being a gap between how the quality management system is intended to be used and how it is actually used in the region of Hedmark-Oppland, the following principles can be adapted from Kotter's eight-step framework:

Assess the sense of urgency among the region's managers

In section 6.6.2, it was argued that in order for a change effort to gain support, it needs to be perceived as important, appropriate and for the better. Furthermore, it was argued in section 4.2.6 that the mangers in an organizational unit should participate in an honest conversation in regards to whether they were committed to TQM principles or not.

In Hedmark and Oppland, middle and group managers hold the key to successful improvement of QMS use. If they are not convinced that the system should be used to a greater degree, it is not likely that it will be. Therefore, as the first step towards QMS use, these managers need to determine whether or not they believe that it is worth embarking on the change effort that improving system use will be. In order to do so, they should openly and honestly discuss whether the status quo for system use is satisfactory (based on the findings of this report, for example), whether they believe that increasing system use will reap performance benefits for the region and whether they consider these benefits relevant to the achievement of the business objectives of the region. In other words, they need to assess whether they believe that the change is important, appropriate and for the better.

If they do not believe so, it is unlikely that they will be able to change the status quo for system use, and they can therefore in principle go on as usual. For purposes of producing symbolic change, that is perhaps quite appropriate. Whether such an

approach is acceptable for corporate management is a separate issue. If it is not, however, the change effort must come from them rather than from regional management.

If the region's managers do believe that the change is important, appropriate and for the better, on the other hand, they have established a sense of urgency among themselves and can proceed to the subsequent steps of this process. However, they must be aware that a sense of urgency should be established among the region's employees in general.

In summary, this initial step is a decision point for the region's managers. Here, they need to assess whether they are willing to invest the energy, work and effort that the change process requires, or whether they believe that it is not worth it. Without such commitment, the change effort is likely to fail.

Create the guiding coalition

It has been shown in this study that the cooperation between the line management and the local QA-coordinators is of vital importance for successful QMS implementation. Furthermore, it has been argued that the guiding coalition must have power in terms of both position authority, expertise, credibility and personal authority. The guiding coalition for the change effort should therefore consist of the region's upper management, the local QA-coordinators, as well as perhaps a few other key members who have high regard in the region, such as selected group managers. This coalition should take the time and effort to reach consensus on the objectives and plans for the change effort.

Develop a vision and strategy

This study has shown that although the expected benefits of the quality management system include improved technical quality, improved project management practices and development and consolidation of competence, this perception is not necessarily shared by employees. The guiding coalition should therefore determine how they want to promote the system. Preferably, it should be promoted by reference to its full set of desired or expected benefits. The challenge here is making it clear why the system

needs to be used by establishing the link between system use and achievement of business objectives. Simply referring to 'our clients require the certification' is not a compelling and unifying vision for system use. Rather, the need for system use should be justified by how it supports the satisfaction of several stakeholder needs.

According to Kotter (2012, p. 74), an effective vision is imaginable, desirable, feasible, focused, flexible and communicable. Furthermore, he argues that it is vital to spend a sufficient amount of time to develop the vision, because it will govern and guide the entire change effort.

Communicate the change vision and display commitment

Once the guiding coalition has come to agree on a consensus in regards to what the objectives of the change effort are and the vision that is meant to guide it, that vision and those objectives should be communicated extensively to the employees in the region. This should be done by all members of the change coalition, not just one manager or the QA-coordinator. Furthermore, it should be done on multiple occasions and in multiple forums – meaning repetitively in office meetings, in informal interaction, during results management etc.

Most importantly, however, commitment to the vision must be displayed by leading by example and eliminating inconsistencies. If it is pronounced that "we will make a region-wide effort to increase system implementation" in office meetings while an assignment manager is later told to "stick to the bare minimum" the change effort will very quickly be undermined.

Empower broad-based action

In order to implement the change effort in the region, both motivational, ability and opportunity factors must be effectively managed to provide the best possible conditions for promoting system use. This means that employees will need to have demands and expectations for system used placed on them, they will need appropriate training and they will need signals that it is ok to spend time to learn how to use the system.

Seeing as there are many who perceive the system as not optimal, there should be a continued effort to encourage an honest discussion in regards to improvement areas of the system – as long as this does not equate signaling that it is acceptable not to use the system because it is not good enough. Jacobsen (2012, p. 141) introduces the concept of 'positive resistance', which is concerned with accepting that there is a plurality in organizations, meaning that there will be several valid perceptions. By allowing such alternative perceptions to be openly discussed, they can form useful feedback to the system's design and contents, which is important to ensure both that the system accurately and realistically describes the organization's processes and that these processes are designed in a way that effectively achieves the business objectives of the organization.

Generate short-term wins and present them to employees

In this study, it has been revealed that several employees feel that there is a threshold to begin using the system. One possible approach to dealing with this is to start by running a few pilot projects where employees who already display a positive attitude towards the system get the mandate to spend a bit of extra time using it in full in a project and reflect on how it has affected it. These employees can then be given the opportunity to describe to their colleagues, such as in office meetings, how it is going and how the system has contributed to their assignment. The idea is to paint a picture that displays how the system works and what benefits it entails that is presented by co-workers who are hold high esteem by others. Furthermore, these employees take this expertise with them into other projects, where other employees can learn from them.

Consolidate wins and produce more change

Once a few pilot projects have been completed and system use has become more widespread in the region, more change can be produced by evaluating how system use has contributed to reaping benefits and how this has manifested itself in projects and in the unit. Preferably, measures should be developed that effectively measure the benefits that system use produces. The challenge is to keep commitment high and complacency low.

Anchor new approaches in the culture

Once it has been established that increased system use has produced benefits, these must be effectively communicated throughout the region. Furthermore, QMS implementation and improvement must have a continued emphasis in several forums and on several occasions. In addition, new employees (either hired separately or coming from acquired companies) must be effectively incorporated into the system. Preferably, system use will become so ingrained in the culture that assignment managers, their superiors and their assignment personnel alike expect and demand that the system is used.

Clearly, the principles outlined above will require a lot of time and effort from several individuals. There will always be the question of whether it is worth it or not, and whether it is possible to choose a few to produce just enough change. The author will leave that question up to those who control the necessary resources for the change effort. However, it is worth mentioning that a few of the above principles cannot be stressed enough. Specifically, it is the author's opinion that if the managers fail to establish urgency among themselves or if they fail to convey their commitment to the employees of the region, little change will take place. It is the managers who are the key players and that must lead their employees to increased system use.

9 Conclusion

This case study has attempted to shed light on the mechanisms that may contribute to or hinder successful quality management system (QMS) implementation in an engineering consulting company. It has been investigated into how the case company (Sweco Norway) has intended to use its QMS, how it is actually used in one of the company's local business units, whether there is a discrepancy between intended use and actual use, and which reasons exist for that discrepancy. Finally, the study has resulted in a suggested framework for minimizing such a discrepancy based on change management principles.

The study has identified several factors and mechanisms that may have contributed to or hindered QMS implementation in Sweco's Hedmark-Oppland region. On the one hand, there are the supporting factors and mechanisms such as the desire to obtain performance benefits by system use (internal motivation), top management commitment to the system, alignment with organization structure, strategy and culture, and a general awareness of individual performance factors such as ability, motivation and opportunity. On the other hand, there are the inhibitory factors and mechanisms such as moderate middle management commitment to system use, perception of the system as unable to produce the expected and desired benefits, an emphasis on quality control rather than quality management, perception of the system as bureaucratic, detached from project reality and non-value adding, challenges associated with the organization's growth strategy, challenges associated with the QA-coordinator role, and challenges associated with individual performance factors such as lack of training, lack of motivation for system use (due to for example perception of lack of incentives and lack of trust in the system) and lack of opportunity to use the system (such as perception of lack of time to learn and to prioritize system use).

In the introduction to this report, it was argued that the QMS implementation success will depend on a combination of what an organization wishes to accomplish by system use, how the system is designed to achieve those objectives and whether the system is actually utilized in the intended manner. In this study, it has been shown that these are factors that must be mutually supportive. In other words, the system design must effectively reflect the expected and desired benefits, the purpose of the system must

be understood and agreed upon by employees, and there must be effective and appropriate mechanisms in place that promote the intended system use.

In order to improve system use, and thereby increase achievement of performance benefits, in the region of Hedmark-Oppland, this study ended by proposing a framework for managing the latter two of the factors in the previous paragraph. This framework was developed based on John P. Kotter's eight-step process for producing change, which was modified into the following principles: Assess the sense of urgency among the region's middle managers; Create the guiding coalition; Develop a vision and strategy; Communicate the change vision and display commitment; Empower broad-based action; Generate short-term wins and present them to employees; Consolidate wins and produce more change; and Anchor new approaches in the culture.

It is the author's opinion that there is a great potential for improved quality management in the region of Hedmark-Oppland, and that this potential can be realized by a systematic and committed effort.

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11 Appendix

Appendix 1: Table of results from assessment of Quality Control Plan establishment

Appendix 2: Quality Control Plan for Assignment Managers

Appendix 3: Objectives and action plan for Sweco Norway 2013

Unit	Size (NOK 1000)	QCP	QCP I	QCP P	QCP E	QCP C	QCP C	contract	
2316	59	No						No	<100.000
2311	70	No						No	<100.000
2311	89	No						No	<100.000
2315	130	No						No	<100.000
2316	79	No						Yes	<100.000
2311	45	No						Yes	<100.000
2311	72	No						yes	<100.000
1424	44	No						Yes	<100.000
2315	1155	No						Yes	>1.000.000
2315	1946	No						Yes	>1.000.000
1424	3737	No						Yes	>1.000.000
2316	2131	Yes	No	Yes	No	No	No	Yes	>1.000.000
2316	2834	Yes	No	No	No	No	No	Yes	>1.000.000
2311	1704	Yes	Yes	Yes	Yes	Yes	No	Yes	>1.000.000
2311	1504	Yes	Yes	Yes	Yes	No	No	Yes	>1.000.000
2315	105	No						Yes	>1.000.000
2316	184	No						Yes	>1.000.000
2311	106	No						Yes	100.000-249.000
2311	115	No						Yes	100.000-249.000
1424	157	No						Yes	100.000-249.000
2316	249	Yes	Yes	Yes	No	Yes	No	Yes	100.000-249.000
2316	174	Yes	No	No	No	No	No	Yes	100.000-249.000
2311	172	Yes	Yes	Yes	No	No	No	Yes	100.000-249.000
2311	128	Yes	Yes	Yes	Yes	No	No	Yes	100.000-249.000
2311	434	No						Yes	100.000-249.000
2311	268	No						Yes	100.000-249.000
2311	260	No						Yes	100.000-249.000
2311	327	No						Yes	250.000-499.000
1424	300	No						Yes	250.000-499.000
2311	364	Yes	Yes	Yes	Yes	Yes	No	Yes	250.000-499.000
1424	320	Yes	Yes	Yes	Yes	No	No	Yes	250.000-499.000
2311	424	Yes	Yes	No	No	No	No	Yes	250.000-499.000
2315	930	No						Yes	250.000-499.000
2316	581	No						Yes	250.000-499.000
2316	575	No						Yes	250.000-499.000
2311	623	No						Yes	500.000-1.000.000
2311	650	No						Yes	500.000-1.000.000
2311	537	No						Yes	500.000-1.000.000
2311	508	No						Yes	500.000-1.000.000
1424	590	No						Yes	500.000-1.000.000
1424	591	No						Yes	500.000-1.000.000
1424	558	Yes	Yes	Yes	No	No	No	Yes	500.000-1.000.000
1424	95	No							500.000-1.000.000
2311	4440	No							500.000-1.000.000
1424	1220	Yes	Yes	Yes	Yes	Yes	No		500.000-1.000.000

Kvalitetskontrollplan for Oppdragsleder (OL)

Veileder for oppdragsstyring ved bruk av sweco@work

Planen lagres i oppdragsmappen under "04 Kontroller og avvik".

Oppdragsnummer/-navn:

Oppdragsleder (OL):

Oppdragsansvarlig (OA):

Fase	Aktivitet	Merknad	Utført	Ikke relevant	Merknad (og evt. link til etablert dokument)	Utført dato	Signatur
INITIERING (I)	**Forespørsel**	**Forespørselen skal dokumenteres . Referer til denne i tilbudet, for eksempel ved å henvise til møte eller telefonsamtale/e-post.**					
	Tilbud	**Tilbudsmal skal benyttes der dette er relevant . Signering i hht fullmaktsmatrise.**					
	Avtale med kunde	**Avtale opprettes før oppstart av oppdrag. Benytt Swecos Oppdragsbekreftelse (med tilhørende Generelle oppdragsvilkår) eller NS. Signering i hht fullmaktsmatrisen.**					
	Oppdragsinnmelding	**Skjema for oppdragsinnmelding fylles ut og sendes OA for kontroll og godkjenning, for deretter å sendes Controller for overføring til PX.**					
	Avtale med underleverandør	**Avtale med underleverandør opprettes primert før tilbudet til kunden sluttføres**					
	Risikovurdering av tilbud	*Foreta risikovurdering før tilbudsarbeidet påbegynnes (KS-02-07-V5).*					
	Dokumentplan	*Leveranse- og kontrollplan etableres.*					
	Budsjett	*Budsjett kan også etableres i skjema for "Oppdragsinnmelding"*					
	Fremdriftsplan	*Fortrinnsvis benyttes Microsoft Project*					
	Organisasjonsplan	*Organisasjonsplan skal opprettes der oppdraget gjøres i hht Plan- og bygningsloven*					
	Risikovurdering av kontrakten	*Foreta risikovurdering av kontraktsforslaget før kontrakten signeres (KS-02-08-V1).*					
	Oppdragsmappe	*Oppdragsperm opprettes der det er behov for papirutgave av oppdragsmaterialet.*					
PLANLEGGING (P)	**Oppdragsplanlegging**	**Oppdragsplanlegging fylles ut og lagres. Oppdateres når det skjer endringer i oppdraget.**					
	Miljøledelse	**Oppdragets miljøkonsekvenser skal vurderes og dokumenteres.**					
	Oppstartsmøte	**Oppstartsmøte avholdes for overføring av oppdraget fra Tilbudsansvarlig og/eller Oppdragsansvarlig til Oppdragsleder og for gjennomgang av oppdragsplanleggingen med oppdragsgruppen. Møtet dokumenteres i oppdragsplanen under rubrikken "Oppfølging".**					
	Referanseliste	**Referanseliste-info etableres og lagres der OL mener oppdraget er viktig som referanse for Sweco.**					
	Ressursplan	*I større oppdrag bør en ressursplan for alle oppdragsmedlemmer etableres.*					
	Kontraktsgjennomgåelse	*Gjennomgå de enkelte punkt i kontrakten med oppdragsgruppen.*					
	Grensesnittmatrise	*Grensesnittmatrise etableres der det er flere prosjekterende involvert i prosjektet.*					
	SHA-plan	*SHA-plan for prosjekteringen etableres.*					
	Betalingsplan	*I større oppdrag over lengre varighet kreves det normalt en betalingsplan.*					
	PA-håndbok	*PA-håndbok etableres der det er behov for å presisere aktiviteter og rutiner i et større oppdrag.*					
	Oppstartsmøte med oppdragsgiver	*Oppstartsmøtet dokumenteres.*					
GJENNOMFØRING (E)	**Økonomiske endringer**	**Endringer og tillegg (som gjelder vår kontrakt) skal varsles oppdragsgiver skriftlig.**					
	Muntlige oppgaver	**Oppgaver som kun kommuniseres muntlige og som påvirker oppdraget, skal dokumenteres. Husk dato og opphav til endring**					
	Endringer i forhold til opprinnelig plan	**Endringer skal dokumenteres (beslutning og årsak til endringen)**					
	Resultatledelse	**Oppdragsansvarlig gjennomfører hvert kvartal en gjennomgang med oppdragsleder, hvor temaet er oppdragets økonomi, kvalitetssikring og ressursutnyttelse (se KS-03-06). Utfylt dokument lagres under oppdragsmappen "04 Kontroll og avvik". I større, komliserte og evt. risikofylte oppdrag bør resultatledelse gjennomføres månedlig.**					
KONTROLL (C)	**Kontroll**	**Kontroll av dokumenter utføres og dokumenteres i hht leveranse- og kontrollplan. Sidemannskontroll på tekniske dokumenter skal alltid gjennomføres. Kontrollen skal også sikre at kontrollplan for viktige og kritiske områder er etterlevd.**					
	Godkjenning	**Alle dokumenter skal godkjennes av OL før utsendelse.**					
	Grunnlagsdokumenter	**Kontrollplan for loggføring og implementering av grunnlagsdokumenter mottatt fra andre.**					
	Sjekklister	*Divisjonsspesifikke sjekklister benyttes der dette er relevant.*					
	Revisjoner	*Kvalitetsrevisjoner utføres av KoM-koordinator. Rapporten lagres i oppdragets undermappe 04 og registreres av KoM-koordinator i selskapets revisjonsregister på sweco@work (se KS-02-01).*					
	Avvik	*Avvik i oppdraget rapporteres og lagres i undermappe 04 og registreres av avdelingens KoM-koordinator i selskapets avviksregister på sweco@work (se KS-02-02). Avviket skal behandles og lukkes av OL.*					
AVSLUTNING (C)	**Melding om oppdragets avslutning**	**Oppdragsgiver meddeles skriftlig via e-post eller brev at oppdraget anses avluttet og vil bli arkivert hos Sweco. Faktura merket "Sluttfaktura" er også å anse som skriftlig melding.**					
	Avslutning i økonomisystemet	**OL melder til Controller at oppdraget kan avsluttes i PX**					
	Oppdragserfaringer	**Kundetilfredshet: OL drøfter med OA om oppdraget skal være gjenstand for en kundeundersøkelse. Se veileder KS-02-12.**					
		Erfaringer diskuteres i oppdragsgruppen og spesielle erfaringer av allmenn interesse dokumenteres.					
	Arkivering	**Oppdragsmappen ryddes, både den elektroniske og papirutgaven. Den elektroniske mappen arkiveres ved bruk av verktøyet "Sweco Arkiv". Papirutgaven arkiveres i hht lokal rutine. Se veileder KS-02-04.**					
	Oppsummeringsmøte med oppdragsgiver	*Avholde møte med oppdragsgiver og nedtegne tilbakemeldingene i referat/rapport.*					
	Referanseliste	*Etablert referanseliste oppdateres.*					
	Prosjektark	*Utarbeide prosjektark for oppdraget som kan benyttes til markedsføring og/eller i tilbud.*					

Sweco Norge AS - Handlingsplan 2013

Strategiske satsningsområder	Sweco Norge AS - mål 2010-2013	Handlinger	Måleparameter	Mål
Kunder	**Vi skal være en av bransjens tre største aktører, regionalt og nasjonalt.**		**Omsetningsøkning**	**20 %**
		Definere klare roller og ansvar overfor identifiserte nøkkelkunder	Andel av tot. ant. nøkkelkunder hvor Rolle- og ansvarskart er utarbeidet	80 %
		Øke omsetningen hos identifiserte nøkkelkunder	Omsetningsøkning	30 %
		Etablere nye kundeforhold	Ant. nye kunder med oms. over 1 mill.	20
Kompetanse	**Vi skal ha kunnskapsrike medarbeidere som vil sikre effektivitet, kvalitet og verdiskapning for samfunnet, kunder, ansatte og eiere.**		**Score Individuell kompetanse SB**	**90**
		Sikre fremtidens kompetanse	Ant. flerfaglige prosj. over 35 mill	4
		Styrke kompetansen innen oppdragsledelse	Antall gjennomførte Oppdragslederkurs	160
		Styrke interne prosesser og rutiner	Score Organisatorisk Effektivitet SB (2012: 58)	70
Medarbeidere	**Vi skal være en attraktiv arbeidsgiver og ha engasjerte ansatte med høyt medarbeiderskap og trivsel, basert på våre verdier i et fysisk og sosialt (psykisk) godt arbeidsmiljø.**		**Sweco Barometer Totalscore - kategori "ikke ledere"**	**70**
		Styrke gjennomføringen av tiltak identifisert i Sweco Barometer:		
		- Organisatorisk Effektivitet	Score Organisatorisk Effektivitet SB (2012: 58)	70
		- Visjon og mål	Score Visjon og Mål SB (2012: 68)	70
		- Bærekraft	Score Bærekraft SB (2012: 63)	70
Merkevare	**Vi skal fremstå på "Vår måte" ved å profilere en tydelig merkevare**		**"Ansattes stolthet" fra SB (2012: 89)**	**89**
		Utvikle tilstedeværelsen ved høyskoler	Rangering Universum NTNU/UMB	5/3
		Styrke synligheten av Sweco i fagkretser og media	Eksterne foredrag holdt av Sweco fageksperter	4/eksp.
Lønnsomhet	**Vi skal ha lønnsom vekst og være den mest lønnsomme rådgiveren i bransjen.**		**Bruttomargin**	**11,6 %**
		Rekruttere ønsket kompetanse	Organisk vekst	10 %
		Øke volumet av underlev. inkl. Cross Border Supply (CBS)	Andel av totalomsetning	7 %